United States Court of Appeals for the District of Columbia Circuit



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UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT

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RALPH NADER, IRIS CLARK INGRAM, DORIS LIMONCELLI, MRS. HIRAM E. NEWBILL AND HENRIETTA R. WALKER,

Appellants,

V.

FEDERAL AVIATION ADMINISTRATION and HONORABLE JOHN H. SHAFFER, ADMINISTRATOR FEDERAL AVIATION ADMINISTRATION,

Appellees.

On Appeal From a Judgment of the United States District Court for the District of Columbia

JOINT APPENDIX

United States Court of Appeals for the District of Columbia Circuit

FILED OCT 7 1970

nathan Daulson

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IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF COLUMBIA

PALPH MAPER, 1719 19th Street, H.W. Washington, D. C.,

IRIS CLARK INCRAM, 875 Azalea Drive Rockville, Daryland 20050,

DORRS LINCKCOLLI,
2403 Gld Grace Lone
Roston, Virginia,

MRS. HIRAM E. NEWHILL, 4647 - 35th Street South Arlington, Virginia,

6117 Woodland Lane Clinton, Maryland,

Plaintiffs,

₹*•

FEDERAL AMINETON ADMINISTRATION 800 Independence Avenue, N. W. Washington, D. C.

and

HONORABLE JOHN H. SHAPER,

* Administrator, Federal

• Aviation Administration,

800 Independence Avenue, N. W.

* Washington, D. C.,

Defendants.

Bo.

IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF COLUMBIA

RALPH NADER,

IRIS CLARK INGRAM,

DORIS LIMONCELLI,

MRS. HIRAM E. NEWBILL, and

HENRIETTA R. WALKER,

Plaintiffs,

7.

No.

FEDERAL AVIATION ADMINISTRATION

and

HONORABLE JOHN H. SHAFFER, Administrator, Federal Aviation Administration,

Defendants.

COMPLAINT FOR INJUNCTION, MANDATORY RELIEF AND DECLARATION OF RIGHTS

- Administration from refusing to immediately ban smoking of cigars, cigarettes and pipes on all passenger carrying commercial aircraft and in the alternative to mandamus the Administrator of the Federal Aviation Administration to immediately impose such a ban and in addition to declare that defendants have the obligation to protect plaintiffs from unjust discrimination in air travel caused by continued smoking on passenger carrying commercial aircraft.
- Jurisdiction is conferred on this Court by Sections 5
 U.S.C. 702 and 703, 28 U.S.C. 1337, 1361, 2201 and 2203, Title 11,
 Section 521 of the District of Columbia Code.

- 3. On December 8, 1969 plaintiff, Ralph Nader, filed a petition for rule making with the defendants requesting, pursuant to Section 49 U.S.C. 1485, that defendants ban smoking of cigars cigarettes and pipes on all passenger carrying commercial aircraft including rotorcraft no later than Januart 7, 1970 (Exhibit 1).
- 4. Plaintiff Nader frequently travels by civil aircraft.

 He has personally experienced discomfort and annoyance as a result of smoking on such aircraft. The presence of smoking on such aircraft is a health hazard and furthermore increases the risk of fire and fire induced smoke on such aircraft thereby creating an immediate and continuing safety hazard.
- 5. On December 24, 1969 plaintiffs Iris Ingram, Doris
 Limoncelli, Mrs. Hiram Newbill and Henrietta Walker intervened in
 the original proceeding filed by plaintiff Nader and also sought a
 ban on smoking of cigars, cigarettes and pipes on all passenger
 carrying commercial aircraft and rotorcraft by January 7, 1970 pursuant
 to Section 49 U.S.C. 1485 (Exhibit 2).
 - 6. Additional data in support of the petition was filed on January 12, 1970 (Exhibit 3) and March 10, 1970 (Exhibit 4).
 - 7. The petition and supporting data establish that smoking by passengers or crewmembers on airplanes with presently utilized interior cabin material and the presence of emergency oxygen. throughout the airplane increases the risk of fire on the airplane or of fire related smoke on the airplane thereby reducing safety for the airplane and its occupants.
- 8. Defendants also have evidence, submitted with FAA
 Docket No. 9166 (which was on file during the pendency of the
 plaintiffs' petition), which evidence establishes that presently
 there are no regulations limiting smoke emission from interior cabin
 materials of passenger carrying commercial aircraft and that present
 materials now approved by defendants and being used in passenger
 carrying commercial aircraft produce a significant quantity of smoke
 when they burn or smolder.

- g. Defendants have determined that present fire safety.

 regulations, including the flame resistance of interior cabin materials and limitations on smoking in the aircraft and means for notification of such limitations, are inadequate to meet the highest safety standards, but the proposed upgrading of these regulations has not been implemented.
 - 10. Defendants have acknowledged that smoke and fume emission from burning interior cabin materials of aircraft is a serious hazard to the occupants.
 - 11. The National Transportation Safety Board has acknowledged that smoke emission from burning interior cabin materials of air-craft has been a leading cause and sometimes the sole cause of fatalities in a number of aircraft accidents.
- 12. The petition and supporting data establish that the presence of tobacco smoke on the airplane increases the quantity of carbon monoxide which the crew breathes increasing the risk that the visual perceptions and mental acuity of the crew will be adversely affected and thereby reducing safety for the airplane and its occupants.
 - a crew member smokes he increases the quantity of carbon monoxide which he breathes increasing the risk that his visual perceptions and mental acuity will be adversely affected and thereby reducing safety for the airplane and its occupants.
 - 14. Section 49 U.S.C. 1303 requires the defendants to regulate air commerce in such a manner as to best promote safety.
 - 15. Section 49 U.S.C. 1421 requires defendants to prescribe rules and regulations to provide adequately for safety in air commerce and to give full consideration to the duty resting upon air carriers to perform their services with the highest possible degree of safety in the public interest.

16. Section 49 U.S.C. 1485 authorizes defendants to immediately adopt a rule without hearing if there is in their opinion an emergency in respect of safety in air commerce requiring immediate action and to hold as soon thereafter as possible a hearing on the matter.

17. The petition and supporting data establish that for more than 6 years it has been the conclusion of the Advisory Committee to the Surgeon General of the Public Health Service that:

Cigarette smoking is a health hazard of sufficient importance in the United States to warrant appropriate remedial action.

It is now generally recognized that tobacco smoke is a known and proven source of debilitating and fatal diseases and constitutes a major health hazard and that at least some of these hazards exist even if only small quantities of tobacco smoke are inhaled.

- 18. The petition and the supporting data establish that the presence of tobacco smoke on the airplane increases the likelihood of illness and disease of the average non-smoking passenger or crew member as a result of inhaling the tobacco smoke thereby reducing—the health and safety of the passengers and crew of the airplane.
 - 19. The petition and the supporting data establish that the presence of tobacco smoke on the airplane causes long lasting allergic reactions such as nausea, headaches, loss of mental acuity, drowsiness, severe head and sinus congestion, dizziness, unusual rapidity of the beating of the heart, throat and nasal irritation and similar symptoms by individuals who, like plaintiffs Ingram, Limoncelli, Newbill and Walker, suffer from allergies to tobacco, thereby reducing the health and safety of those passengers of the airplane who suffer from allergies.
 - 20. The petition and the supporting data establish that the presence of tobacco smoke on the airplane aggravates pre-existing illnesses of passengers and crew members thereby reducing the health and safety of the passengers and crew of the airplanes.

- 21. Present FAA regulations (14 CFR, Sections 25.831 and 29.831) require that all passenger compartment air "be free from harmful or hazardous concentrations of gases or vapors", establishes -50 parts per million as the maximum permissible concentration of carbon monoxide and requires that such limits may not be exceeded after a reasonably probable failure or malfunction of the airplane ventilating system.
 - 22. The petition and the supporting data establish that the presence of tobacco smoke on the airplane prevents many potential passengers who do not smoke on airplanes from using airplanes or using airplanes as frequently as they would like and annoys and discomforts many other passengers who do not smoke on airplanes, thereby discriminating against these passengers and potential passengers by effectively denying them airplane accomodations or restricting their enjoyment of airplane travel.
 - support their petition, defendants have received a significant number of letters from the general public the vast majority of which letters expressed displeasure with and discomfort from tobacco smoke on commercial passenger carrying airplanes (Exhibit 5).
 - 24. Section 49 U.S.C. 1374 requires the defendants to prevent any passenger from being subjected to unjust discrimination.
 - 25. On March 25, 1970 the Administrator published in the Federal Register a response to the petition filed by plaintiffs in the form of an Advanced Notice of Proposed Rule Making. (ANPPM) (Exhibit 6)
 - its resources and reasonable outside inquiries did not yield a sufficient basis to identify and select a tenative course or alternate course of action or that it would be helpful to invite public participation in the identification and selection of a course or alternative course of action.

27. Comments from the public are to be received until June 23, 1970 after which time (but at no specified time) defendants will determine if it is in the public interest to proceed further and if 50 a Notice of Proposed Rule Making will be issued.

significate hazard of fire or fire induced smoke as a result of smoking on passenger carrying commercial aircraft because 1) there is no smoking permitted during take-off or landing, 2) present fire-resistance standards for interior materials ensures that they are not easily ignited and if ignited are self-extinguishing (i.e. will not continue to flame for an extended period after the sources of the flame is removed) and slow-burning, 3) fires are easily detectable and extinguished by crew members and 4) oxygen is dispensed in rare occasions and only in small quantities compared to the volume of the airplane and when dispensed smoking is prohibited.

the three aircraft accidents or incidents cited by plaintiffs in their petition was it established that smoking was a probable cause of the -accident or incident.

the grounds of annoyance and discomfort to and discrimination against non-smoking passengers may not be justified under existing statutory authority of the Administrator.

31. In the ANPRM the defendants acknowledged that Section
49 U.S.C. 1421 authorizing the Administrator to promote safety of
flight of civil aircraft by prescribing reasonable rules, provides
adequate statutory authority to prescribe rules to protect non-smoking
passengers from health hazards caused by exposure to smoke from
others who smoke on the airplane.

32. In the ANPRM the defendants solicited public comments on the health effects of tobacco smoke on airplane passengers and possible relief for non-smoking passengers (such as segregated seating or increased ventilation rates) other than a ban on smoking.

- petition filed by plaintiffs does not contain any evidence to dispute the facts presented by plaintiffs or to support the facts which defendants allege support their actions.
- delayed implementation of a ban on smoking on all passenger carrying commercial aircraft.
- 25. Defendants have failed to meet their statutory duty of providing for the highest degree of safety in air travel and their statutory duty to best promote safety in air travel.
- 36. Defendants have failed to enforce existing regulations regarding the possible accumulation of hazardous vapors and fumes in the cabin compartments of passenger carrying commercial aircraft.
- 37. Defendants have failed to meet their statutory duty by refusing to consider discrimination against non-smoking passengers as a result of smoking on passenger carrying commercial aircraft.
- 38. Defendants have acted arbitrarily and capriciously and have abused their discretion in concluding that on the evidence presented there is no hazard of fire or smoke induced fire as a result of the presence of burning tobacco on passenger carrying commercial aircraft.
- 39. Defendants have acted arbitrarily and capriciously and have abused their discretion in concluding that on the evidence presented there is no safety hazard as a result of crew members inhaling tobacco smoke.
- 40. Defendants have acted arbitrarily and capriciously and have abused their discretion in concluding that there is insufficient evidence presented to establish that tobacco smoke is hazardous to the health of non-smokers on passenger carrying commercial aircraft.

Al. Defendants have acted arbitrarily and capriciously and have abused their discretion in concluding that there is insufficient evidence presented to establish that tobacco smoke is hazardous to the health of passengers with allergies or pre-existing illnesses who travel on passenger carrying commercial aircraft.

RELIEF

Wherefore plaintiffs pray as follows:

- 1. That the Court enjoin defendant FAA from refusing to immediately adopt a rule banning all tobacco smoking on passenger carrying commercial aircraft including rotorcraft and thereafter to hold a public hearing on the rule as required by 49 U.S.C. 1485.
- 2. Alternatively that the Court order defendant Administrator to immediately adopt a rule banning all tobacco smoking on passenger carrying commercial aircraft including rotorcraft and thereafter to hold a public hearing on the rule as required by 49 U.S.C. 1485.
- 3. Alternatively that the Court enjoin defendant FAA from refusing to immediately enforce 14 C.F.R. Sections 25.831 and 29.831 by banning all tobacco smoking on passenger carrying commercial aircraft including totorcraft.
- 4. Alternatively that the Court order defendant Administrator to immediately enforce 14 C.F.R. Sections 25.831 and 29.831 by banning all tobacco smoking on passenger carrying commercial aircraft including rotorcraft.
- 5. That this Court declare that the defendants have the obligation under Section 49 U.S.C. 1374 to prohibit unjust discrimination against passengers on commercial aircraft and declare that continued smoking of tobacco on passenger carrying commercial aircraft including rotorcraft represents unjust discrimination against non-smoking passengers.

6. For such further relief as this Court shall deem just.

Respectfully submitted,

BERLIN, ROISMAN AND KESSLER 1910 N Street, N. W. Washington, D. C. 20036

Anthony Z. Roisman

Counsel for Plaintiffs

Date:

EXHIBIT 1

FEDERAL AVIATION ADMINISTRATION

Ralph Nader

Petitioner

> PETITION REQUESTING IMMEDIATE ENACTMENT OF A RULE ABOLISHING THE SMOKING OF CIGARS, CIGARETTES AND PIPES ON PASSENGER CARRYING FLIGHTS OF CIVIL AIRCRAFT INCLUDING ROTORCRAFT

Petitioner requests the Administrator to exercise his authority under 14 CFR Section 11.25 et seq. to issue a final rule within 30 days to ban smoking of cigars, cigarettes and pipes on all passenger carrying air flights. The rule is required as a matter of safety and comfort to passengers on air flights and in particular is required because cigar, cigarette and pipe smoke create an imminent and serious threat of:

- 1. Fire in the plane
- 2. Deleterious health effects upon the passengers
- 3. Annoyance and discomfort to the passengers.

The Administrator has the authority and duty under 49 USC

1421 to:

Promote safety of flight of civil air ciaft in air commerce by prescribing.... (6) Such reasonable rules and regulations, or minimum standards, governing other practices, mathods and procedure, as the administrator may find necessary to provide adequately for ... safety in air commerce.

Section 1421(b) of Title 49 USC requires that full consideration be given by the Administrator to "the duty resting upon air carriers to perform their services with the highest possible degree of safety in the public interest." [Emphasis added].

Under 49 USC 1424(b) the Administrator is obligated to impose on carrier operating certificates:

such terms, conditions and limitations as are reasonably necessary to assure safety in air transportation.

Under 49 USC 1429 the administrator is given authority to modify existing air carrier certificates for safety and the public interest. The overwhelming evidence indicating the serious dangers associated with tobacco smoke and smoking requires that the Administrator take immediate action to ban all smoking on passenger carrying flights of civil aircraft in order to assure the "highest possible degree of safety". Therefore petitioner requests the Administrator to exercise his emergency power under 49 USC 1485 and issue immediately and in no event in more than 30 days a regulation banning smoking of pipes, cigars and cigarettes on passenger carrying civil aircraft.

I. PETITIONER

Petitioner is an adult male, who frequently travels by civil aircraft and who does not smoke. His personal affidavit attached herewith as Exhibit A establishes that he has personally experienced discomfort and annoyance as a result of smoking permitted on civil aircraft, that the presence of such smoking causes an imminent hazard to his health and well being, and that such smoking gravely increases the risk of fire on the aircraft thereby creating an immediate and continuing hazard to his safety.

II. APPLICABLE LAW AND REGULATIONS

The Federal Aviation Act of 1958 is primarily law for the regulation of air transportation in a manner designed to provide

the maximum safety and comfort for the general public consistent with development of air travel and the national defense. In carrying out this purpose the Act in Section 1303 of 49 USC imposes upon the Administrator the duty to consider as part of the public interest:

- (a) The regulation of air commerce in such manner as to best promote its development and safety and fulfill the requirements of national defense; [Emphasis added]
- (b) ...the regulation of both civil and military operations in such airspace in the interest of the <u>safety</u> and efficiency of both; [Emphasis added]

Thus the statutory scheme creates an obligation on the Administrator to balance safety against the development of air travel and national defense. Absent a need for development of air travel or national defense, safety is the primary criteria to be used in establishing rules and regulations. There is no public interest justification for continuing to allow smoking on passenger carrying civil air craft! This noxious and oft condemned habit is hardly required on aircraft as a matter of national defense or for development of air travel. In fact the continued existence of smoking on aircraft is exclusively a result of the inaction of the FAA which neither allows nor controls smoking on aircraft. With the exception of the requirement regarding ashtrays in smoking compartments (14 CFR Section 25.853(c)) no regulation of the FAA directly refers to smoking although, as will be indicated below, FAA regulations establish standards which in effect require that smoking be banned on aircraft. In short there is no statutory reason why smoking should be allowed and if it in any way and to any degree presents a safety hazard it must be immediately abolished.

.III. THE SAFETY PROBLEM.

A. Passenger Health

Tobacco is an herb which contains cellulosic products, starches, proteins, sugars, alkaloids, pectic substances, hydrocarbon, phenols, fatty acids, isoprenoids, sterols and inorganic minerals. When burned it creates a smoke consisting of a heterogeneous mixture of gases, uncondensed vapors and liquid particulate matter. According to the Report of the Advisory Committee to the Surgeon General of the Public Health Service in the comprehensive 1964 Report on Smoking and Health (pp. 51-60) cigarette smoke contains the following major ingredients (pp. 51, 60):

MAJOR CLASSES OF COMPOUNDS IN THE PARTICULATE PHASE OF CIGARETTE SMOKE

Class	Percent in particu- late* phase	Number of Compounds	Toxic action on lung
Acids	5.3-8.3 8.5 4.9 0.44	25 18 21 64 81 45	Some irritant Possible irritation Some irritant Some irritant Some carcinogenic Irritant and possibly cocarcinogenic

≠Water 27%

Compound	Concentra-	Safe level for indus- trial exposure*	Toxic action on lung	
	(ppm)	(ppm)		
Carbon Monoxide	42,000	.100	.Unknown	
Carbon Dioxide	92,000			
Methane, ethane, propane, butane, etc.	87,000	500	None None	
Acetylene, ethylene, propy- lene, etc.	31,000	. 5,000	None	
Formaldehyde	30		1	
Acetaldehyde	3,200	200	Irritant	
Acrolein	150		Irritant	
Yethanol	700	0.5	Irritant	
Acetone	1,100		Irritant	
Methyl ethyl ketone		200	irritant	
Ammonia	500	250	Irritant	
Vitrogen Dioxide	300	150	irritant	
Sethyl Nitrite	.250	5	Irritant	
	200	** **	Unknown	
lydrogen Sulfide	40 .	20	Irritant	
lydrogen Cyanide	1,600	10	Respiratory enzyme pois:	
cthyl Chloride	1,200	100	Unknown	

^{*} The values listed refer to time-weighted average concentrations for a normal work day.

The 1964 Report made the following findings with respect to the health dangers of cigarette smoking:

The mortality ratio for male cigarette smokers compared with non-smokers for all causes of death taken together, is 1.68, representing a total death rate nearly 70 percent higher than for non-smokers. (This ratio includes death rates for diseases not listed in the table as well as for the 14 disease categories shown.) (p. 28).

XXX

Expressed in percentage-form, this is equivalent to a statement that for coronary artery disease, the leading cause of death in this country, the death rate is 70 percent higher for eigarette smokers. For chronic bronchitis and emphysema, which are among the leading causes of severe disability, the death rate for eigarette smokers is 500 percent higher than for non-smokers. For lung cancer, the most frequent site of cancer in man, the death rate is nearly 1,000 percent higher. (p.29).

XXX

Cigarette smoking is causally related to lung cancer in men; the magnitude of the effect of cigarette smoking far outweighs all other factors. The data for women, though less rextensive; point in the same direction. (p. 31).

XXX

Cigarette smoking is the most important of the causes of chronic bronchitis in the United States, and increases the risk of dying from chronic bronchitis and emphysema. (p. 31).

XXX

The death rate for smokers of cigarettes only, who were smoking at the time of entry into the particular prospective study, is about 70 percent higher than that for non-smokers. The death rates increase with the amount smoked. (p. 35).

XXX

Cigarette smoking is the most important of the causes of bronchitis in the United States, and increases the risk of dying from chronic bronchitis. (p. 38).

Cough, sputum production, or the two combined are consistently more frequent among cigarette smokers than among non-smokers. (p.38)

XXX

In view of the continuing and mounting evidence from many sources, it is the judgment of the Committee that digarette smoking contributes substantially to mortality from certain specific diseases and to the overall death rate. (p. 31).

XXX

As the state of the state of the

On the basis of prolonged study and evaluation of many lines of converging evidence, the Committee makes the following.

Cigarette smoking is a health hazard of sufficient importance in the United States to warrant appropriate remedial action.

These grave conclusions were expanded by the 1968 Supplement

to the 1967 Public Health Service Review of the Health Consequences of

Smoking (p. 3):

Previous findings reported in 1967 indicate that digarette smoking is associated with an increase in overall mortality and morbidity and leads to a substantial excess of deaths in those people who smoke. In addition, evidence herein presented shows that life expectancy among young men is reduced by an average of 8 years in "heavy" digarette smokers, those who smoke over two packs a day, and an average of 4 years in "light" day.

XXX

Because of the increasing convergence of epidemiological and physiological findings relating cigarette smoking to coronary heart disease, it is concluded that cigarette smoking can contribute to the development of cardiovascular disease and particularly to death from coronary heart disease.

The health dangers created by smoking are a result of inhalation of the smoke itself. This smoke is considerably more poisonous when it comes from the stronger pipe and cigar tobaccos. For instance in the case of pipe smoke and its effect upon lip of the smoker the 1964 Surgeon General's Report concluded (p. 204):

The causal relationship of the smoking of pipes to the development of cancer of the lip appears to be established.

of its source (pipe, tigar, or cigarette) is a serious health hazard.

Petitioner here, a non-smoker, has brought this petition because as a frequent passenger on civil aircraft where smoking is permitted he is necessarily subjected to contact with and inhalation of tobacco-smoke a known and proven source of debilitating and fatal diseases.

As noted before the smoke, rather than the smoking is the chief cause of the health hazard presented by tobacco. One conclusion of the 1969-Supplement to the 1967 Public Health Service Review of the Health Consequences of Smoking was (p. 6):

Tobacco smoke contains a large number and a wide variety of compounds which may result in complex and multiple pathophysiological effects on the various tissues and organ systems. While further research is needed to investigate the exact biomechanisms involved in the pathological effects of smoking, the evidence clearly shows that cigaratte smoking constitutes a major health hazard in the United States.

The animal studies reported in the Surgeon General's Report were obviously conducted without the animal actually smoking. Nonetheless these studies established the hazards of tobasse smoke whether it is received as a result of smoking or indicately. For instance the 1967 Public Health Service Review of the Health Consequences of Smoking

reported the following animal study (p. 106) which closely approximates the type, if not the quantity of exposure to smoke experienced by petitioner and other passengers while enclosed in the passenger compartment of an aircraft in which tobacco smoking occurs:

Results of two experimental studies relating smoke inhalation to lung parenchymal changes in dogs have been published in the last 3 years. Hernandez and his coworkers (39) used 23 healthy greyhounds retired from racing. Eight served as controls and 15 were exposed to high concentrations of eigarette smoke for 30-45 minutes twice daily in wooden inhalation chambers.

Seven animals were exposed for-approximately 5 months and the remaining eight were sacrificed after almost 15 months of smoke inhalation. Disruption of the lung parenchyma was assessed macroscopically by comparison with preselected standards graded in severity from 0 to 3. Assessment was made without knowledge of the source of the lung specimen.

Lung damage among dogs that were exposed longer showed significantly greater disruption of the lung parenchyma.

The tobacco smoke to which the non-smoker is exposed while travelling on a civil aircraft is of three types. First the smoke which comes from the front of-the cigarette, pipe or cigar which is not even taken into the mouth of the smoker and which is not filtered through the cigar, pipe or cigarette. This is the most toxic smoke emore toxic even than the smoke used in the majority of the studies upon which the Surgeon General's Reports were based. A second class of smoke is that which is drawn through the pipe, cigar or cigarette into the mouth of the smoker but which is not inhaled. Some portion, but far from all of the harmful elements in the smoke are left in the smoker's mouth. The 1964 Surgeon General's Report (p. 264) concluded that the exhaled smoke contained 33-66% by weight of the tars which were included in the original smoke. The third type of smoke is that which is inhaled by the smoker and then exhaled. In this case 10-20% of the particles of the smoke are released into the air when the smoke is exhaled (1967 Surgeon General's Report (p. 264)) and an unknown portion of the gas contained in the original smoke is released into the air, a fact demonstrable even to layman who see and breathe the smoke exhaled by others.

It is unnecessary to explore the actual chemical composition of the cabin mixture of these three types of smoke (in order to establish the presence of a health hazard to the passenger) because the scientific evidence clearly demonstrates that even small quantities of tobacco smoke (and thus small quantities of the particles and gases in tobacco smoke) are hazardous to health. For instance the 1968 Supplement to the 1967 Public Health Review of the Health Consequences of Smoking reported (p. 69-70):

Most surveys have been of adults, but Holland, et al. (26) reported the findings of an investigation of smoking and respiratory symptoms among more than 10,000 school children, age eleven or more, in England. The survey was conducted in 1965 and repeated in 1966. Cigarette smokers (at least one cigarette per week) more frequently reported symptoms of cough and phlegm production than nonsmokers and the prevalence of symptoms increased with increases in the amount smoked. Children who smoked one year but did not smoke in the subsequent year had a lower frequency of symptoms in the second year.

in addition at least three scientific studies have uncovered a direct correlation between illness and disease symptoms and the exposure of non-smokers to an environment in which others smoke.

Two of these studies were conducted by Dr. Paul Cameron in the most recent of which he was assisted by Dr. John S. Kostin, M.D. and several others. These two reports are attached as Exhibits B & C to this petition. The report conclusions were summarized in Volume 65, No. 1 of the Medical Journal of the West Virginia State Medical Association (p. 22):

Children living with an adult who smokes were sick more frequently than youngsters who live in homes of nonsmokers, reports a research team headed by Dr. Paul D. Campron, Assistant Professor of Psychology at Wayne State University Detroit.

Doctor Cameron's survey revealed that children exposed to tobacco smoke have respiratory diseases about twice as frequently as those in nonsmoking families.

In addition, the study found that the more smoke the youngsters were exposed to, the greater their chances of becoming ill. A similar study conducted in Denver two years ago came to the same conclusions. The more recent survey of 727 Detroit families takes the findings a step further. It discounts the effects of air pollution on the subjects.

Air pollution is recognized as being harmful to the respiratory systems of children. Detroit ranks as the ninth smoggiest city in the United States, while Denver comes in far down the list, at 27th.

Thus, according to Doctor Cameron, his surveys shows that background pollution does not mask the effects of tobacco smoke on the young. In other words, smoking parents cannot say that the air is so dirty that their smoking will not make any difference to the health of their children.

A third study was conducted by Dr. Cyril D. Fullmer, M.D.,
Director of Cytology Laboratory and Principal Investigator of
Public Health Service Respiratory Research Project, Holy Cross
Hospital, Salt Lake City, Utah and others and reported in Volume 65,
Number 1 (p. 42) of the Utah Issue (January, 1969) of the Rocky
Mountain Medical Journal (attached as Exhibit D of this petition).
In the course of the study the following factors were discovered
(p. 45):

An initial control group of non-smokers showed an unexplained low incidence of spirals. This group was excluded because inquiry revealed a history in every instance of working in offices where there was exposure to second-hand environmental digarette smoke. This observation clearly identifies an important new problem. Now much health hazard does prolonged exposure and heavy concentration of second-hand digarette smoke represent for non-smokers? The incidence of spirals suggests bronchial disease and infection could result. There are other implications which need study.

These studies merely confirm a fact that hardly needed additional proof - namely, that the health hazards present in tobacco smoke affect the individual that inhales the smoke whether or not the inhalation occurs as a result of the individual smoking or as a result of someone else smoking.

1. The Remedy

The Administrator should take immediate action to ensure the petitioner and all civil aircraft passengers that they will no longer be involuntarily subjected to the health hazards of tobacco smoke and the Administrator should immediately ban all smoking of pipes, cigars and cigarettes on passenger carrying civil aircraft.

2. An Alternative Remedy

The dangers created by the gases in tobacco smoke have not gone unrecognized by the FAA. In 14 CFR Section 25.831(b) standards for ventilation include a requirement that passenger compartment air must "be free from harmful or hazardous concentrations of gases or vapors." This would clearly include tobacco smoke in general which the Surgeon General Reports establish has hazardous concentrations of gases. Furthermore, in meeting this test a carbon monoxide concentration in excess of one part per 20,000 parts of air (50 parts per million) is considered hazardous. (See also 14 CFR Section 29.831 applying to rotorcraft). As the 1964 Surgeon General's Report indicates (p. 60) digarette smoke has a concentration of 42,000 parts per million of carbon monoxide, a concentration 8,400 times greater than what the FAA itself considers hazardous.

This health hazard is particularly serious for those passengers who are more susceptible to illness such as the young and the elderly and to those passengers who are already ill. For one group of potential passengers, the highly allergic, the presence of tobacco smoke in the cabin makes air travel impossible and those people cannot fly as long as this condition continues.

Subsection (c) of 14 CFR 25.831 requires that provision must be made to ensure that the 50 parts per million maximum concentration of carbon monoxide is not exceeded "after reasonably probable failure or malfunctioning of the ventilating, heating, pressurization or other systems and equipment." (See also 14 CFR 29.831 relating to rotorcraft). It is impossible to see how that assurance can be given by an aircraft in which passengers are permitted to continuously add massive concentrations of carbon monoxide to the air particularly in light of the fact that smoking would not be discontinued, if at all, until after the ventilation failure.

Thus, as an alternative, the Administrator could ban all smoking of pipes, cigars and cigarettes on passenger carrying civil aircraft by merely enforcing the letter of the FAA's own regulations regarding the presence of hazardous concentrations of gases and vapors in the passenger compartments.

B. The Fire Hezard

The FAA regulations generally evince, and rightly so, a grave concern with the danger of fire in aircraft. For instance, a fire in a passenger aircraft with over 150 passengers in it while the aircraft is travelling at 30,000 feet is the kind of tragedy which the FAA . obviously is intended to prevent through its rules and regulations. However, although a number of provisions of the FAA regulations attempt to deal with this problem, the present regulations continue to permit every passenger his own conflagration kit - a cigarette, cigar or pipe and matches or lighter. A recent television commercial by one of the airlines ironically displays two stewardesses indicating their concern for a passenger by both offering to light his eigerette with their lighters. It is incredible that this obvious fire hazard has never been eliminated by regulation. Even the airlines recognize the danger of smoking in the fuel laden planes by voluntarily imposing a no smoking ban during take-off and landings. While mid-air collisions are less frequent than landing and take-off accidents, nonetheless the fire hazard in such collisions are just as great.

· To fully understand the danger it is necessary to place the passenger in context - in the aircraft, in his seat. He is surrounded by a veritable tinder box of potentially burnable materials. There is no FAA requirement that upholstery stuffing, curtains, rugs, pillows, blankets, walls, windows, etc. be fire proof. The fire protection standards relevant to these materials are governed by 14 CFR Section 25.853(a) and (b). (See also 14 CFR Sections 27.853 and 29.853 relating to rotorcraft). Interior wall panels, ceiling panels, draperies, structural flooring, baggage racks, partitions, thermal insulation, light cover transparencies in panel form and coated fabric insulation are only required to self extinguish in an unspecified period of time after the flame is removed. All other materials including carpets and upholstery fabric must be flame resistant when tested horizontally. In Section 1.1 of 14 CFR "flame resistant" is defined as not susceptible to combustion to the point of propagating a flame, beyond safe limits, after the ignition source is removed.

These so-called fire protection standards do not mean that materials will not burn if they come into contact with a cigarette, cigar or pipe ash or spark or a match or lighter. Furthermore, another critical aspect of the fire dangers is not regulated at all - the smoke producing problem. No FAA regulation imposes any direct limitation on the smoke or smoldering qualities of any interior passenger compartment materials. Inasmuch as airplane ventilation systems at their best are not required to be equipped to handle the problem created by smoldering upholstery stuffing or material or a smoking carpet, there is a grave danger that the passengers in a plane might suffocate to death even though no flame ever occurred.

The presence in the passenger compartment of these burnable and smokeable materials presents reason enough to ban smoking as a fire hazard but the dangers are even greater. Nearly all commercial planes carry oxygen equipment which is available at each passenger's seat.

On virtually (14 CFR 25.1447) (a)) all jet aircraft the passenger compartment.

is equipped with oxygen breathing equipment. Section 25.1447 of 14CFR requires that on aircraft which fly above 25,000, as virtually all jets do, an oxygen dispensing unit for each passenger must be connected immediately to an oxygen supply terminal and if the aircraft is certified above 30,000 feet the oxygen must automatically come to the passenger. In the case of a cabin depressurization or an accidental release of the oxygen passengers then smoking could cause a flash fire by igniting the highly volatile oxygen. Even the smoldering digarette, digar or pipe which the passenger thought had been extinguished could be the source of the fatal spark. The tragic death of three Apollo astronauts as the result of a tiny spark igniting oxygen should be warning enough of the dangers. Section 25.1451 of 14 CFR recognizes the obvious threat caused by the presence of oxygen by excluding it from any fire zone. As long as smoking is permitted in the aircarft, the entire aircraft is a continuously smoldering fire zone.

The obvious fire risks which continued smoking on civil aircraft create is reason enough to ben the smoking. But, one study conducted by four members of the Office of Aviation Medicine of the then Federal Aviation Agency conclusively establishes that all passengers on all flights face intolerable dangers from fire that cannot and must not continue unabated. In 1964 at the Air Transport and Space Meeting of the Society of Automotive Engineers and the American Society of Mechanical Engineers a paper by Stanley Mohler, John Swearingen, Ernest M. Fedden and J. D. Garner entitled Human Factors of Emergency Evacuation revealed the following (p. 3):

Interestingly, a recent incident occurred which necessitated the emergency evacuation of a jet airliner containing 153 people. A complete emergency evacuation was accomplished within 2 minutes and 20 sec. This incident occurred on Oct. 27, 1963, and involved TWA flight 703, which utilized a Boeing 707-331-8 item of equipment.

The aircraft left the ramp at 1200 Zulu, and its crew of 11 with 142 passengers (including three infants, a near-term pregnant woman, and a man on crutches (with one leg in a cast)) anticipated a normal taxi operation to the runway.

Suddenly, just as the stewardesses were demonstrating the emergency oxygen equipment, smoke (and, a few seconds later, flames) began rising from the floor between the second and third row of seats in the first class compartment on the right at station 540-560.

The Flight Engineer was notified of the smoke by the stewardess, and, after checking, returned to the flight deck and informed the Captain. The aircraft was immadiately stopped, the engines were shut down, and all mambers of the crew began to assist with the evacuation of the aircraft.

One member used a water fire extinguisher which put out the flames but a dense black smoke continued to billow forth. Breathing was difficult, and visibility in the cabin was extremely restricted (various crew members and passengers stated that they could not see the opposite ends of the cabin). As an added complication, the public address system failed during the routine briefing.

With the 707 stopped, the actual evacuation procedure started, and all four escape slides were utilized in this gear-down evacuation. The complete evacuation was accomplished in 2 minutes and 20 sec, in spite of the smoke, the heterogeneous nature of the passengers, and the completely unanticipated nature of the incident. A number of the passengers were excited, and so were frightened, but no panic occurred and no injuries resulted.

All persons were evacuated prior to arrival of fire and ambulance vehicles. Apparently, a lighted cigarette butt started the cabin fire. [Emphasis added]

This near tragedy is all the warning that the FAA could possibly need to immediately remove from the arroraft the risk created by smoking. Petitioner and every airline passenger is now being forced to take a serious risk of permanent bodily injury or death as a result of the presence of burning cigars, cigarettes and pipes on civil aircraft. There is absolutely no justification for the continuation of this serious safety hazard.

C. Passenger Annoyance and Discomfort

One thems which runs through the Federal Aviation Act of 1958 is that all passengers are to be given equal treatment without discrimination. Section 1374 of Title 49 of USC prohibits any "undue or unreasonable preference or advantage" and prohibits subjecting "any ... person ... to any unjust discrimination or any undue or unreasonable prejudice or disadvantage." Nonetheless, as petitioner's affidavit establishes, he is subjected to a very real discrimination, prejudice and disadvantage because he not only must pay the fare that all passengers pay but also must be subjected to the dangers and risks created by other passengers who are smoking as well as the annoyance and personal discomfort thereby created. If he were required to move a scat away from smokers the dangers would not only persist but in addition he would again be discriminated against by having to sit at another location and being limited to a certain area of the plane. By being subjected to the annoyance discomfort and inconvenience of others smoking petitioner is as clearly discriminated against as if he had been required to sit at the back of the plane, or to occupy a separate, but allegedly equal, seat from that of the smokers.

Recent published letters of airplane passengers indicate that many share the views of the petition regarding the annoyance and

discomfort created by smoking passengers on those who do not smoke.

Exhibit E attached to this petition contains some of these published outcries.

The FAA has the responsibility to see that passengers on civil aircraft who pay equal fares are treated equally. Until smoking is banned on civil aircraft passengers such as this petitioner are not given equal treatment but are forced, without justification, to submit to the noxious fumes released by their cigar, pipe or cigarette smoking fellow passengers and to the serious risks to the health and safety of all passengers caused by smoking.

CONCLUSIONS

The smoking of cigars, cigarettes and pipes has been condemned by the leading medical authorities in this country and in the federal government. In these studies no socially useful purpose has been found for smoking that outweighs its serious health hazards. Ronetheless, everyday a federal body, the FAA, subjects millions of people to the hazards of tobacco smoke in closely confined areas by allowing smoking of pipes, cigars and cigarettes on passenger carrying civil aircraft. Charged with the responsibility of encouraging air travel the FAA is virtually luring healthy people to smoke contamination and serious health risks in the narrow confines of civil aircraft. Charged with a responsibility for the safety of air travellers the FAA as a spokesman for the federal government should have taken the lead in reducing the hazards created created by tobacco smoke and should have banned smoking of cigars, cigarettes, and pipes on all civil aircraft. Even under existing FAA regulations smoking should be banned as creating concentrations of

hazardous gases. Immediate remedial action must be taken.

Perhaps even more shocking is the fire hazard created by smoking, a hazard which in a matter of seconds could destroy many lives. The FAA is charged with maintaining the highest possible safety in air travel. By stopping smoking the relative safety of air travel will increase by a significant degree. This step should not be delayed.

The FAA is the watchdog of the industry and must act to eliminate unreasonable prejudice or disadvantage among passengers. Those who do not smoke on airplanes are subjected to far less comfortable accommodations as a result of other passengers who smoke and are subjected to serious health and safety hazards as a result of the smoking. There is no possible justification for this discrimination and it must be eliminated at once.

Relief Sought

The Administrator under the emergency authority provided in 49 USC 1485 with respect to action required for safety in air commerce and under 14 CFR Section 11.25 et seq. should immediately issue and put into effect the following regulation:

No person on any passenger carrying civil aircraft (including rotorcraft) shall light or smoke or cause to be lit or smoked any pipe, cigar or cigarette while on the aircraft (including rotorcraft) or within 50 feet of the aircraft (including rotorcraft). An announcement of this rule shall be made by a member of the crew before departure from any airport and appropriate notices, conspicuasly placed, shall appear in all passenger compartments.

Alternatively the Administrator shall under the same authority issue an order to the same effect pursuant to the requirements of 14CFR Sections 25.831 and 29.831.

Respectfully submitted,

Anthony Z. Roisman Berlin,Roisman and Kessler 1910 N Street, N.W. Washington, D.C. The undersigned, Ralph Nader, being duly sworn, deposes and says:

- 1. My primary occupation is a writer, lecturer, and advocate on consumer and other matters related to the public interest. In the course of this work I frequently travel throughout the country by means of passenger carrying civil aircraft.
- 2. While travelling in an airplane, I find the presence of tobacco smoke a substantial annoyance and irritation.
- 3. I am familiar with many of the scientifically established hazards of tobacco smoke and believe that being subjected to this smoke while travelling by airplane harms my health.
- 4. I am aware that the passenger compartment of the airplane contains many burnable and smoke-producing materials, that oxygen is stored throughout the cabin and that the aircraft carries large quantities of combustible fuel. I believe that smoking in this environment creates a grave risk of fire, suffocating smoke or both in the passenger compartment.

Ralph Nader

Notary

Washington, D. C.

Subscribed and sworn to before me this 7th day of December 1969.

Notary Public

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only if listed in a diagnostic category by the Public He, eta Service,

The presence of pets and smoking as

age of 10; 657 were 10 to 19; 651 were 20 to 29; 417 were 50 to 39; 595 were 49 (NS), while the data suggest that a majority of Denver residents have a pet to 49; 272 were 50 to 59; 137 were 60 to 69; 62 were 70 to 79; 23 were 89 to 89; and 3 were 90 or over. The median age of our sample was 21.6, while the mean age was 28.4. As is evident in Table I, the presence or absence of pets had no and, by implication, upon disease per se. The correlation between, per ownership and the presence of a smoker in the family as estimated by phi (4) was 0.603 We obtained a total sample of 3,257 subjects, of whom 637 were maker the Influence upon the perception of distance in family members (Nº = 0.63; NS) In their homes (N2 :: 151.1; p < 0.00091).

0.01). The probable range of perceived Arcase rate for children with randor(s). confidence. It would appear that a majority of males and a minipity of fermies of adult women who snoke between 38 and 44 per cent, and for adult males es 0.12; NS), while for those under 20 years of 126, a higher likelicate of perin the family is between 30.7 and 33.7 per cent, and for children without a smoker in the family it is between 20.0 and 29.6 per cent at the 0.05 level of over the uge of 19 smoke (95 per cent confidence limits piece the percenture The influence of smeking is less apparent. For those over 19 years of age there is apparently no relationship between perceived disease and sateking (X2 ceived disease exists when the testibence includes a smoker (N2 = 4.51; p < the coresponding figures are 58 and 61 per cent).

years of ago were reported as ill or siek, compared to 30.8 per cent of these Mealth appears to improve with age as only 15.2 per cent of these over 19 under 20. The 95 per cent confidence limits place the percentage of perceived adult disease within the last week between 13.64 and 16.8 per cent, while for children the percentages are 28.2 to 33.4 per cent.

langual level in the home, what effect days the presence or absence of pets have irritant in the environment? As the presence of pets must significantly raise the is a subling does in fact have a deleterious effect upon health as the Surgeon societed with their liabit? Further, what will be the effect of the presence of a . I telephone surrey of 1900 residences in Denver yielded critence which suggests never viewed discuss (1) is associated with the presence of a smoker in the environ-read of childrens (2) is uncluded in smoking among adults, and (3) is narrated to get ownership. thenced's report suggests, will snokers be aware of physical dysfunction asender upon children's health, which would seem more sensitive to the added correlates of perceived disease Paul Cameron, Ph.D., Menomonic, Wis.

METHOD

environment

n and it is a the force questions by to the present study which sought to

converte perceived disease with the presence of smoking and/or pets in the home

(the "to mower" and refusal rate was 35.6 per cent) or if a business were Every hundred-seventy-second mane in the Denver area phone book was eath of in collecting the data. If the subject did not answer or refused to conjectate o rejected, the next name was called for a total of 1,000 dwellings. A responsible adalt or other tecanger was called to the plane and asked the following questions in order or neverse under

1. Is there a pet in the home? If so, what kind of pet(s) ?

are the ages arel sex of all the people living in your home? 2. What

d. the any family member had a sickness or disease of any kind in the last 3. Poss anyone in your home smoke? If so, which family members are they?

begoingut of Education and Psychology, Stout State University, Menomonic for publication flow, 21, 1966, Property.

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When one considers the concern parents express for their children in other areas week spains more than the nonsmoker's. If this is the case, the greater is are rate would netually exist in the adult smokers instead of their children. aked andalies, they or their spouse would tend to report only the more severe and digestive affictions and thus the effects of smoking do not show Juli data. With children, for whom no such built-in mental gymnastic iew, while the first suffers from indeterminety of predictive outcome. Alasked for great care in the respondent's appraisal of the health of over the last week, it is possible that the smoker's time judgment of would not seem unversoudde for a parent to reconsider his smoking hy sunders,* Perhaps some adverse effect upon the germ plasm added environmental irritant results in a higher incidence of disease. belt of the latter explanations would seem wasmable from a biologic point of betrekildren, Vet, if we nevept this explanation, how are we to account for the ack of greater perecived disease among smokers them whes, especially in view of in lowered perception of discuss among progent, appears equally assaulte. A second afternative is presented by the greater consumption of coffee r upon progeny in utero, caused by coffee, alcohol, or smoking or some interetion of these, has resulted in a weakened resistance for smokers' children. A ded afternative would suggest that because smokers are used to their habitto greater prevalence of psychosanatic symptoms, and disease, among smokers? couldy they have become so used to the cough and shortness of breath asin of disease among their children. Yet the obserse, that anxiety would maniexercised disease in children: A number of interpretations of these results are solide, It is conseivable that the greater muralicism and anxiety of smokers eted to sensitize them to a greater awareness of disease, "real" or fameled, in singly with their habit that their auxiety manifeds itself in greater percepang and perceived disease among adults, compled with a positive corclation between the presence of a sucker in the bone and the incidence of The major inding of our study is undoubtedly the lack of correlation beits pirelible effect on his progeny. a Bight of wen smeli nd steaked o in the o to family Spiratory Samuel We sists, the ist itself

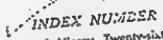
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ther extinuity, that about 41 per cent of the solut female and about 61 per stonyide survey of sweling patterns in 1956" which indicated that about 36 or cent of the soluit females and about 73 per cent of the adults nades in the enver region smoked, suggests some reduction in mate smoking in the last on of the adult male population surdic compared with the results of the largest

decade. As one sampling procedure tended to climinate the least recording strate, who smoke less," our figures probably over climate the true per ofThe author wishes to express his thank on the following such in the limit of the following the following the following the following for the following the following following the following followi

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health of smokers' and nonsmokers' The heal children

John H. Wolfe, Gregory Tiphe, Burry Oxelett, Richard Stocker, and Paul Cameran, Ph.D., John S. Kostin, M.D., Jeffrey M. Zuks, Jeffrey Winten, Detroit, Mich.

to explore perible differences in the health of smokers and nonsmokers. Snakers children nere sick more frequently (primarily respiratory illness). Serem hundred twenty-seren families were administered on neute illness questionnaire by those to explore pertible differences in the health of smokes and normalistic children because the selection of children were sick more frequently (primatily respiratory illness). In addition, some tridence suggested that the amount of tobacto smoke in the home excitanged may be related to chance of illness.

ly published evidence on the issue is that reported by the senior es that smokers' children were siek more frequently than nonsmokers' The present study sought to remedy some of the defects of the Denver is and provide confirmatory or disconfirmatory evidence on the health of is children. questions concerning the health of children subjected to the siered by phone to 1,669 Denver metropolitan area households, provided of their parents have found their way into the literature," ap-In the previous study a questionnaire that covered acute illness, og haldes o r the enl in 1967. though

25). Although about 20 per eent of the bouscholds initially refused. trekt metropolitum plione book for a total of 2,360 subjects (average housered twenty-seven household units were systemalically. drawn from on hund S 1 3

Name State University.

Not the publication Oct. 9, 1968.

Then from the publication Oct. 9, 1968.

Then from the phone man statical into equal peritons. Then from the phone numbers in each of the notice in the periton. (2) dividing that number by Y wild the product of S. (3).

It denotes a statical annales from the first numbers and (1) considers from that is annales of the number of the Northbers and C. Considers from the first Northbers and the first number, then X numbers for the peritons number, was the new of the number of

existent); the total of such numbers was 19. All interviews were conducted in emsideryl "dead" (one can ring a number in Delvit with no assurance that a all minibasi that answered at any time. All phone numbers that did not answer were recalled at least 3 times on 3 different days and time periods before being phone is lecated at the other end; thus some of our nomintervieus were nonas an interester, per detent recalling combined with encious explanations of the Importance of the research finally resulted in a 160 per cent is season as a early spring (April 22 through May 13, 1963). . .

Thirty-two college student volunteers were trained in the administration of the questionmaire and method of sampling. All recalls, whether for data verification or charification, were made by the last 6 junior investigators.

firm the contact or clavify some point of ambiguity, Coding of the interviews Sixty per cent of the family units contacted initially were recalled to verify the contact by the 6 junior authors. With rare exception this was merely to conwas handled by the 6 junior investigators. Coding of each of the 6 was verified by another of the 6.

Interviews

Interviews were conducted with any responsible adult (over 17) in the household over the phone.

illness instrument. After an introduction in which the interviewer identified. himself as a representative of the Detroit Health Survey, he asked the following The questionnaire was modeled after the Public Ifealth Service (PHS) acute

2. How are the household members related to you (mother, spouse, son, 1. What are the ages and sexes of your household members?

friend, in-law) !

cation taken for this condition? (d) Did this condition change their usual daily activities (hy making them do less around the house or keeping them from work 3. Which household members were sick, 14, or injured in the past week (that is, the last 7 days including today), If III: (a) What was the nature of the condition! (b) Was a dector seen or called about this condition? (c) Was modior school)

(a) What was the illness? (b) Did they weeke medical affection? (c) Did it 3. Which household members had a major illness in the past year? If Ill:

retriet their activities?

smake (elganettes, elgar, or pipe) ! (b) How much do they sande (per day) ! (c) flow much do they smoke at home per day (in number of elgarettes, elgaret 5, Whield household members smoke! If they smoker (a) What do they

I tiller greetions were asked about the frequency of u.s. of Manufrey varburapaint necticing, exposure to noise, and the presence of an antennatic dishwacher in the forms.

A major difference between our questionnaire and the PHS acute illness questionnine is that we asked for a recall of only 7 days while the latter asks for a recall of 14 days.

SESULTS

As is orthent in Table I, for children aged 16 or less, the presence of tebraces smake in the carrivonment is associated with besenced physical health (injuries are excluded from the over-all measure; for the smoke-subjected children they tends is for the non-goode-subjected children, i.e., no difference). This relationship tends to held even when the PHS strictium, that a reported discuss to associated with medical consultation and, or restriction of activity, is applied. The associated with medical consultation and, or restriction of activity, is applied. Table 11 presents the respiratory filmess breakdown, All X* are corrected for continuity. The medical mumber of children was 2 for smoking and nonsmoking families. About 2 per cent of the 13 to 16 year olds were reported as smoking:

"Analysis (we did add such smoking into their smoke index).

Table 1. Children residing in an environment with tolacco smoke present view.

•		0.00	NS.	0.01	< 0.02	N.N. N.N.	72
. ,	2.	6.15; p < 0.03 8.50; p < 0.01	< 11 NB	7.35; P < 0.01 3.11; P < 0.07	3.36; p < 0.02	~~ ~~ ~~ ~~	× 33 NN
Tobacco smoke	9%	\$ 2.0 3.1)	(5.3)	97.0	(63)	(13.5) (13.5)	(111)
	No.	(\$3 20 0 0	22	623	10	<u> </u>	6
swarke at	25	88.50 8.60	(6.6)	(13.3)	(0.11.5)	(6:8) (6:8)	(111.5)
Tolared smake	No.	(50) (50) (10)	2	S. 2. 2.		£22	} `` ` ≌
		Aged 16 or less, N == 625 Neutrity ill Will requirement united	and/or melical consul-	Aged 9 or less, N =2 319 New ly lil With resplanting illness.	III with re-treated sciently half-or actions consul-	Nacl 5 or less N vs 183 New 19 ill With a spiritory library	fil with restricted potanty. The first predict consul-

No four not to a solid the two ramples thus from rouse combine population (1-7) from No four four the rame from the rame from the rame from the rame for the population for the property of th

The may entry or 1d and under and chosen for comparability with 1918 publications. The

Promparition of these children, aged The ben, subjected to the statement of these children, aged The continuation is a follows; for the Establishment who were not ill, the mean amount of sucking clone in the bone is perfined and another the follows; for the Established and were not ill, the mean amount of sucking clone in the bone is perfined and clone in the bone is perfined and the home as per index = 2.25 ± 1.16 Bisecial R = 0.22 ± 0.12; perfect smaked at bone by all household nembers (1 on the index indicates of eight of a pack (eights and pipefuls were counted as packs), the trend for children nove packs (eights and pipefuls were counted as packs). The trend for children aged 16 or under was less pronounced. The difference in the groups of children in sex composition, regular use of vitamins or other patent medicines (such as major illness in the past year was not appreciably or statistically frequency of a major illness in the past year was not appreciably or statistically significant.

DISCUSSION

Certainly the major import of the present report is the excential replication of the finding of the Denver study—smokers' children are ill more frequently than nonsmokers' children. The data further full as they should it tolaces smoke affects children in much the same way as it apparently affects adults. There we category and, further, some evidence that, among children expensed to smoke those who were ill were exposed more. It would be interesting to know whicher these who were ill were exposed more. It would be interesting to know whicher the severity of illness is also related to the amount of smoke in the environment.

The present study remedied some of the limitations of the Denver study without changing the outcome. The Denver study: (1) had a rejection rate of 35.6 per cent, while the present study had no rejections; (2) utilized a questionmaire that did not permit the classification of illnesses; (3) had no dula-verifica-

Table II. Respiratory illucises in children in smaky environment vs. children not in smoky environment

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	Azed 16 or best, N == 695	Common cold.	fastacara with digestive manifestations	Reachits	Ag. 19 or less, N == 310	Lond Only acute upper respication conditions Leterate with discertism manifestations	Paramonia	In order of places conditions
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(though our experience with the present study would seem to few were needed, i.e., college redunteers are honest); (1) did not ernine which suckers sucked at home or just when may from home, and ied out in an area of relatively low air pollution (twenty-seventh ong standard metropeditan areas),* while the present study was performed in charicely polluted cuvincument (Pytroit ranks minth among standard metrogoddinit. past that WHA CALL

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the two groups appears equivalent in that no difference was found between in in injury rate; had the smoke-present children had a higher injury rate, night have suggested that there was a greater laxity toward preventive by-ne on the part of their parents. gredition of our samples, but there is reason to suppose that our randomizing there is a possibility that some chance socieeeenmie difference equivalents in percentage who reside in homes where an antomatio would tend to weigh against the notion. We did not check the racial dene manders controlled for this possibility. The general health awareness as between the children subjected to smoky environments and those not so subs present, which would presumably be directly related to socioecosol, their masher is nie status, Mitmonth

an average of 53 per cent of the acute illness weorded by PIIS, while in the and be mentioned. For instance, we found the average household size to be 1918, The same source notes that about 72 per cent of geute illness reported olice melled consultation and/or restriction of activity; for the Detroit A number of communalities between our samples and the samples regularly the nation-wide PHS Health Interview Survey conducted each year In Derwit and 3.26 in Deaver, which is quite similar to the 3.2 reported by ly the corresponding figure was 76 per cent. Respiratory illness accounted rent study, in the spring, the figure was 58 per cent. Thus it seems likely comparable data can be obtained by phone. orted by

they ! (3) Is the effect genetic and/or environmental? (4) Is the effect correct with a decreaser in lung functioning as indexed by respiratory function (3) (5) Boes alresorbitioning lave any interactive or direct effects on tobacco decreased effect on children As children are apparently particularly susceptible to air pollution, our en youngsters are out of cloors more and windows are openied? (2) Does the et intensity in winter when children are indoors more and windows are ally closed (the Denver study, carried out in late winter, suggests this poset of tehreco snoko on children diminish or disappear during the summer les that we are currently exploring include: (1) Does the apparent Possibilit

One now has to raise the specter of anoking larming not only the . .. cent findings definitive, pury contraction species of showing marrows.

Into of the sander but also the health of his property. as undoubtolly surprise few. Most physicians we have talked with have uge definitive, but, coupled with the Denver study, they are certainly leated that they surpreted the relationship all along. We do not consider the

L. Sala, L. Trimpoy, J. Walling, M. Wille by, G. Walle, L. Zwick, F. Polaron, and R. V. O

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Sputum of chronic cigarette smokers --

Microscopic observations and incidence of bronchial and bronchiolar spirals, fibrils and casts

Cyril D. Fullmer, MD,* J. Gordon Short, MD, Adele Allen, CT, and Kenneth Walker, CT, Salt Lake City

Social Security officials report that pulmonary emphysema is the second most common cause of total disability in America today. The large majority of patients with pulmonary emphysema smoke cigarettes. The death rate due to this disease may soon exceed the mortality due to lung cancer. This is a preliminary report.

Chronic cicarette smokers represent a high risk population group to the development of bronchogenie carcinoma and pulmonary emphysema. The incidence and mortality from these devastating diseases increase each year until they are major causes of disability and death in America." I have altered this paper from the abstract published in the Rocky Mountain Medical Journal in order to report a major bonus scientific observation relating to effects of eightette smoking observed during study of patients enrolled in the Respiratory Research Project aimed at control of bronchogenie carcinoma through cell study. We have observed large numbers of spirals in the . sputum of apparently healthy eigarette smoking individuals and have postulated their probable role as a major mechanism in pathogenesis of pulmonary emphysema.

genesis of pulmonary emphysema.

This original paper was read at the Annual Meeting of the Utan State Meeting Association, Salt Lake City, September

12, 1903.

*Del Pullmer is Director of Cytology Laboratory and Principal Inventional of 1918 Respiratory Research Project, Holy Cross Hospital, but Lake Cay.

Material, methods and results

The non-cellular material and bronchial secretion available for study by preparation of cytological specimens of respiratory tract origin appear to contain evidence of mechanisms of disease process of major significance in chronic eigarette smoking. In this reported study, all sputum samples were obtained in the early morning by spontaneous cough or induction cough technics. Fresh bronchial mucus samples were prepared immediately by a trained cytotechnician or cytopreparatory technician. All slides were processed by a modified Rapanicolaou staining technic. To be a satisfactory specimen of respiratory tract origin, the cell spreads of each case must contain "dust cells" (phagocytic histiocytes). The entire study group, including control cases, totaled 155 volunteers. The detailed composition of the group will be described later in the paper. Multiple sputum specimens were collected and studied from each individual.

*Curschmann's type spirals appear in the non-cellular bronchial secretion and have been reported in asthma and certain other lung diseases since they were first reported in 1880 by Curschmann' in Germany. He and other investigators **24.4.4.6.7.** found these spirals in patients with bronchial asthma, bronchialities and fibrinous pneumonia. Recent textbooks have considered spirals most characteristic of bronchial asthma.*

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Service. Memorial Hospital for Cancer and Allied Diseases, and Pathologist at Sloan-Rettering Institute for Cancer Research, Sloan-Rettering Division of Cornell University Medical School, New York City, is one of the foremost authorities in cytopathology today. He gives an acurate description of Curschmann's spirals: "Curschmann's spirals are seen with thir frequency in patients with chronic bronchial disorders. The spiral is a cost of inspissated mucus, shaped to fit the lumen of a small bronchus. The characteristic coiled appearance of the spirals with a dark central axis and a translucent periphery allow for an easy recognition." (Fig. 1).

Our studies confirm his description. Moreover, we observed a great variety of related spiral and fibrillary structures which appear to represent casts. The spirals all exhibit a dark axial thread or core. The surfaces of these physical structures may be coated by clear tenacious, mucus or by sharp radially projecting and precipitated crystals or fibrils. Some structures have interesting and varied "pony tail" longitudinal fibrillary composition. Some are associated with a coating by polymorphonuclear leukocytes or incorporated cellular and nuclear debris. A small percentage of casts appear to be composed of exioliated adherent epithelial cells and mucus.

More than one-half of the chronic eigarette smokers could not produce a spontaneous sputum specimen and inflammation appeared to be of minor or no significance. In less than one-half of the cases the productive "eigarette cough" showed evidence of some degree of chronic bronchitis and exudate.

We have been impressed by the large numbers of these definite physical spiral structures in the sputum of apparently healthy chronic eigarette smoking male and female subjects. The number of cases of eigarette smokers in the present research project makes available the case material of hundreds of sputum specimens. Data today is based on the critical analysis and spiral counts of sputum specimens from 160 heavy, 20-year plus eigarette smoking men, 25 cigarette smoking women, 10 randomly selected ex-smokers and 20 appropriate control cases.

tified to be clinically free of evidence of number or significant respiratory disease in writing by their referring and attending physicians. The age range is from 39 to 31 years. Two of the men smoked 1/2 package of cigarettes a day. Ninety-eight cases smoked 1 or

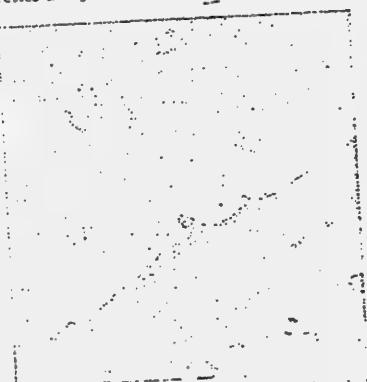


Fig. 1. Mag. X750. Classical Curschmann's spiral with coiled dark central axis and translucent periphery of mucus. Chronic cigarette smoking.



Fig. 2. Mag. X2409. High magnification of Cursch-mann's spiral to show dark fibrils twisted around tark central axis and some delicate fibrils radiating to periphery. Chronic eigarette smoking.

for January 1909

more packages daily. Sputum specimens could be obtained spontaneously in 45 cases. Nobulizer induced specimens were obtained in 54 cases. No specimen could be obtained in one patient with our induction method.

The incidence of Curschmann's and related spirals in this series of cases was significantly 97 per cent. The number of spirals per case varied from 0 to over 500 (Fig. 6) per aliquot of specimen. An aliquot is the small amount of mucus required to prepare 4 glass slides. The specimen volume varies per patient and was not measured in this study. The spiral count of the entire 24-hour sputum volume would yield the true number of spirals expectorated per day. We estimate the count would number in the 1,000's for many cases. Multiply this estimate by 30-40 years of smoking and the true meaning of possible spiral effect on lung parenchyma becomes apparent. There is some correlation between the eigerette smoking dosage and duration of regular smoking and the number of spirals. However, there is wide variation in the numbers. Regular, two-packs-per-day eigerette smoking cases frequently show between 150 and 200 or more spirals per aliquot of sputum specimen

Most of the specimens were collected when there was little air pollution or smog. There were no cases of occupational exposure to asbestos, uranium or significant environmental dust.

The spirals vary in length from 30 to 50 micra to over 8 millimeters. The larger spirals are visible to the unaided eye and can be manipulated and stretched from the glass slides with a teasing needle. They resemble a tight coiled spring or elastic band which can be stretched and which snap into their original position on the slide when released. (Figs. 2-7.)

In the female study group, 7 cases could produce spontaneous sputum. Specimens were induced in 17 cases. One patient could not expectorate a satisfactory specimen. The incidence of spirals for the entire group was 52 per cent.

Many ex-smokers have been studied, but this report is limited to a random selection of

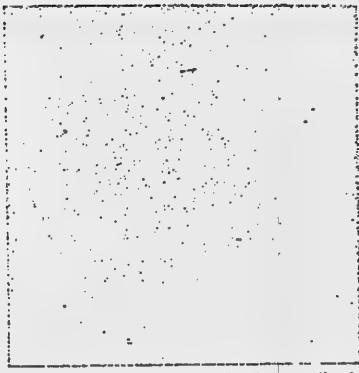


Fig. 3. Mag. X750. The central axis is smaller in diameter consistent with origin from a terminal bronchiole showing extreme degree of coiled and retracted appearance. Many spirals are of this diameter. Chronic eigerette smoking. Note sparsity of leukocytes.

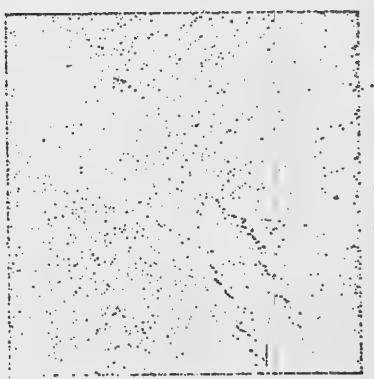


Fig. 4. Mag. X750. A large diameter, dark axis spiral of probable respiratory bronchial origin. Note radiating fibrillary mucus at periphery.

10 cases who have abstained from smoking for over one year. One patient could produce spontaneous sputum. Nine cases could be satisfactorily induced. Six of the 10 cases had spirals, but the number was greatly reduced to 10 or less per specimen, and the occurrence

The street of the Rocky Mountain Madical Journal

cigarette smoke. Ten cases were studied. Only five of these volunteers could produce a satisfactory sputum specimen with the aid of a routine nebulizer. Five cases could not expectorate. Spirals were absent in this control group.

Discussion

The significantly high incidence and great number of Cursehmann's type and other varieties of spirals in the sputum from the respiratory tracts of apparently healthy male and female smokers is impressive and is reported for the first time. Analysis of the sizes, staining reactions, microscopic appearances and variations of these coiled physical structures leads to an agreement with the interpretation of Koss that the spiral "is a cast of bronchial mucus."

It can be speculated that when ciliary cleansing action of bronchial epithelial cells is paralyzed or destroyed, mucus accumulates, stagnates, and lodges as casts in many small bronchi and bronchicles. Tobacco smoke may have a condensation effect on mucus and produce casts by this mechanism. It is not known whether accumulation of tobacco condensates and carcinogen's occurs. The most attractive theory is that obstructive physical formed



Fig. 6. Mag. X750. This sputum sample is loaded with dark staining spirals. Note the essociated exudate. The smoker's cough is in reality chronic bronchitis.

Fig. 5. Mag. X759. A "pony tail" fibrillary structure, not artifact. The central fibrils are compressed like tightly arranged threads. The radiating contour of the periphery is also fibrillary. Mucus often undergoes "fibrillary degeneration" or chemical-physical change under the influence of heavy or prolonged cigarette smoking.

was limited to cases with a history of heavy smoking and to cases with obstructive pulmonary disease and emphysema. We have documented ex-smokers who displayed disappearance of spirals after one year of tobacco abstinence.

An initial control group of non-smokers showed an unexplained low incidence of spirals. This group was excluded because inquiry revealed a history in every instance of working in offices where there was exposure to second-hand; environmental digarette smoke. This observation clearly identifies an important new problem. How much health hazard does prolonged exposure and heavy concentration of second-hand digarette smoke represent for non-smokers? The incidence of spirals suggests bronchial disease and infection could result. There are other implications which need study.

The second control group were confirmed to be in good health and to have minimal, infrequent, or no environmental exposure to

for January 1969

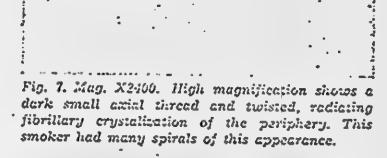
spirals supply the major unexplained mechanism which operates during the long silent period of precimical lung damage and explains the pathogenesis of pulmonary emphysema. The spirals would contract and produce a ball valve obstructive effect during expiration with alveolar ectasia and breakdown. We are in the process of further correlation and analytical studies as a consequence to the observations reported in this paper. The possible significance of two consistent appearances in the spirals should be emphasized:

1. The diameter in micra of the dark axial core of the spiral is comparable to the micra diameter-of the terminal respiratory bronchi and bronchioles. How long these mucus casts remain in situ and operate as a "ball-valve" obstructive mechanism is unknown.

2. The consistent appearance of twisted and coiled spiral forms are understandable when we consider that they are molded in bronchi and bronchioles of compressible lung parenchyma subjected to the stress of breathing and coughing. There would be a constant expanding and contracting dynamic motion over the mucus casts. The explosive forces of coughing would help dislodge the solidified cast forms. During gradual dislodgment, the dark axial core would be surrounded by tenacious clear mucus giving them their classical appearance.

Summery

Curschmann's type spirals appeared in the sputum of \$2 per cent of apparently healthy eigerette smoking women and 97 per cent of apparently healthy eigerette smoking men studied. Control cases selected by criteria



of freedom from disease and absence of exposure to eigarette smoke at home and at work showed no spirals. The possible major mechanisms of disease producing effect by spirals have been postulated. Other implications of possible significant and practical importance were identified during this study. Spirals appeared in sputum of one control group of non-smokers who were exposed to tobacco smoke in their environment. This finding identifies the problem that secondhand eigarette-smoke-filled rooms at home. office or in public gathering places may represent a distinct health hazard for non-smokers. It is urgent that careful research studies determine the extent and varieties of risks. •

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EXHIBIT E

and the list two thousand years, give or take a t concuries, Western literature has been filled in visions of hell. The one which stands out in Let is the the-and-orimatene version in James Joyce's that of the Artist as a Young Man." With all the Let Joyce and the other literary giants who have the life to the Lagrence of the life to the life to general form. garany to the lastorie gallery. In capsule form, I

frething like this:

130 julinor circles the earth, endlessly. In the orbin, descrigers sit in a changeless asmosphere of dense the emoke, conglished and incl. withouting, Temy eyes to imply make it impossible for them to follow the in movie, which tentalizes them with an occasional which is quickly obscured. Their throats ache from blutton and they can neither converse with fellow gers nor convey their wishes to the stewardesses. causes smallow their food; it tastes like circlers. may, the dumned and the doomed aboard this not-tified elight are the non-smokers; they are the sufthe condemned.

vision list came to me on a recent flight to Chi-Honest, An elduly woman sat on my left, smoking



smaly. As dinner was wheeled in, my neighbor was ag a gloson, chareking heartly at the mild tragedy e files ban, all the while dangling a weed from her hand and washing smoke over my meal. The acrid et in which I was enveloped did wonders for the and my taste buds. (There are those who would you believe that any condition, atmospheric or other-Which deadens the taste of airline food, is really ssing in disguise. Such an opinion is held by at least major culinary critic, whose views were reprinted in Theoria magazine last year. I am not about to get alled this time around in the merits of this particular cont, but the quality of airline cuisine aside, I think he depth of low manners to pollute the air when one clie is eating at your elbow—whether you're to feet up or at a favorite restaurant on solid ground. whereys unazed by the thou fallessness, the rudeness high oblices addicts, by that anxiety to light up before the early has been kild down.)

recurrent highwaire lads me wedged in the middle hereser, two lant glandular cases. In great humor wichange massive churks of Rulian salami and cheese

and, naturally, they are smoking all the white points poison across me in great quaptities. I can't tall wallie is werse: the garde or the smoke. They are endeding over such things as the merits of their favorice pustajoins, the healing power of niculne and have poorly who join Weight Watchers invariably fritter away to nothing and explie. Eventually I fritter away, errolofed by smoke. I evaporate, blend with the ingredients locaing around in the cabin. And then it is just the two of them, swelling joyously towards each other through the smag.

This coming of the 747 jumbo jets provides the Linke. with an opportunity for new initiatives, not just on smoking, but on many areas of in-light policies affecting passenger convenience and comfort. This time on the socabon, though, Im going to concentrate my ammunition on smching.

With the wide new interiors in the 747s, the three banks of seats, the new spaciousness, why can't the carriess offer, where possible, sections for smokers and nonsmokers? Such a solution seems feasible if the utilities want to do it. Or use the upstairs passenger section as a lounge either for smokers or non-smokers; but spell it out so that passengers who are annoyed or imitated by the smoke have some sanctuary. (I have often staggered from my seat to seek clear air in a lounge, only to find myself surrounded by an even greater concentration of fellow passongers determined to conteminate the zir.)

I can see where the idea of such segregation in a relatively small afteruft poses problems—though hardly insurmountable. But it is done in theatres, movie houses, concert halls, and a small number of courageous resautifulas dedicated to good eating have banned smoking altograher. Why not in the 747? Why not, for that matter, in the strotch DC-8s, with three large cabins? One of the two economy class sections, or one side of a section, could be reserved for those of us who prefer to travel in clear, clean air.

Quite a few carriers today ask their customers at the time the reservation is made what they would like the lunch or dinner. Just add a question: Would you rather sit with the smokers or non-smokers? They can smoke pipes and cigars and strands of hemp in the smoking section, for all I'd care.

tind a solution involving configuration would in no way interfere with the airlines' fervent and understandable objectives to keep the passengers as busy, as occupied, as Alaxed, as content as possible. So they won't think about the fact that they're flying, I'm not suggesting, God forbid, that we ban or even curtail smoking. Just that we isolate those who do from those who don't.

This editorial is in no way designed to get into a medical debate. I leave that to the American Cancer Society and the Surgeon General. But let's face it, the message is clear, for an Einstein with a supersonic IQ or an underdeveloped eleting the weed is indeed a health hazard, and many of us find the noxious furnes obnexious.

So let's give non-smokers a break. The airlines can make the skies a lot friendlier and the going a great deal greater If some minimal considerable to given to those of us where not hooked on nicotine. Let's light hir pollution not only in the air above our cities, but in the air inside our aircraft. Please.

ATR TRAVEL. OFFICIAL AIRLINE GUIL.

July; 1969 -

must say agree with your collection. a limit to the is through with Builts.

for a long time I have been enacement hallo had him non-simble to me himbered i forested for frequency grant management all freser so thank southers their grow higher " whomever they happen to be the terricularly laneying in classe quarters of the can-ol, as an abrilanc callin where one can-inger relief from the navious smake

Your suggestion, that non-smokers he sured of clean air in a Thou-smokers haparenteer. That is a great deal of nee. I trust you can include the airlines follow tids plan or sanctiting similar pet will benefit, and he until expreciated

President Quality Matels Süver Spring, Md.

One thing that might deserve more mention is the improved control of in-cabin fires caused by eigenettes and matches. A recent statistic from the National Safety Council indicated that there were 200,000 free caused in this manner, annually, resulting in the double of 1,200 people.

Of course, I do not know how many,

understanding is that fewer than 50% of the people are smakers. Why should the minutely bother the majority?

You are in an excellent position to call attention to the schooling problem and I support you completely. Thank you for your service to the traveling public. BAY BLOWS

Washington, D.C.

which is a second of the part of the second Profess to Execting

Things are looking up for those of us who prefer to brefishe clean air instead of used tobacco stacks. Of course I'm referring to your editorial, "The Read to Hall is Paved with Butts.

There perhaps is little any of us can do to discourage the dirty and obnoxious habit known as smoking. Most smokers know it is unlicably, city, expensive, and offersive to non-smokers and others in

close proximity. Till now, very little protest has originated from travelers who have had pleasant air trips rained by solfish unegoverned persons blawing great gebs of noxious smoke into a fellow pussenger's innocent lungs. The ranks of non-smokers, not health buils by any means, must make their plight known, must communicate with the airliter, federal officials, and state officials. Our request for better flight conditions should be heard.

Seldom does a month go by when I don't receive a questionnaire or a call from an airline asking me what I think about this or that airline, with requests for sug-

My more censes to function.

Since I am a sales executive for an airline, and I greatly value my job, may I ask that you harn this letter it soon as you read it -or take my name off.

Generally I manage to stay the feet or more from a ram-stop smaker but on an airplane there's no way to avoid it. Have you sat in a sent in front of a surcher who holds his weed out in front of him in order to keep smoke out of his own inconsiderate eyes? I have. The smake curis around the seat and onion my own intule system.

I hate it.

I offer no remedy. I offer no emistruc-

tive suggestions. I offer only agreement, if it is of any

Name Withheld By Request

The state of the s Finds Smake intolerable

Hooray! I wholeheartedly agree that when it comes to smakers and non-smokers, there should be segregation. Smokers seem utterly unconscious of the fact that a great many of us find it intolerable.

My sincere best wishes for your success in separating the plane smokers.

PARE PITCHER Beech Aircraft Boulder, Colo.

Asthma Sufferer

The second secon

As an occasional astima sufferer, I teo have gone through Hall by shring beside a smoker. Just when I try to take a deep breath or swallow a mountiful of foud-I instead choke and cough.

Let me be the first to sign your petition for a non-smoking section! Yours for more "No Smoking" signs.

Hilda F. Marick Yarway Corp. Blue Bell, Pa.

II I for one will give you all the support I can if you wish to undertake a campaign of substance to correct the situation.

THOMAS C. ORR Executive Vice President Ask Mr. Poster Travel New York

T. It's about time non-smokers got some relief. The exhaust fumes at Kennedy Airport are more pleasant than the stale air in jet cabins. Keep plugging.

Huco Bur New York

II My first-and only-airplane trip was to Cermany last February, and I was unfortunate to have been seated next to a man who lit each eigarette with the stab of the previous one. I thought I would croak. It was the closest thing to hell that I've ever come across. To make things CONTINUES

Market and the second s

people in the future will contain some

constructive entirism on the subject of

tobacco, butts, smoke and common de-

Thanks to you for a courageous stand.

RICHARD II. SCHUMAN

Travel Service of Yuma

Altergia to Emake

I am one of those unfortunate souls. tho happen to be altergie to tobacco smoke.

President

Yuma, Ariz.

FFICIAL AIRLINE GUIDE

he July from all Am Theyeau

y, the non-smoking traveler. STEWART BAINING

Time the The Haranes

The Read to five its Pared with Butts

where the Let two thinkered years, give or take a made naturally, they are smalling all the white, pulling continuous. We seem that have been and the seem to the shake. They are charten with vertices of held The one which stands out in worse the media of their favorite comparing to the head of their favorite comparing to the favorite comparing to the favorite comparing the favority comparing the favorite comparing the favority compa

Martin Deutsch's July Am Thaven editorial prompted all these letters and then some. gestions as to how service can be improved. My suggestions to these airline

if any, were in airplane cabins, but certuinly any gesture at central and limita-tion would be welcomed—even by those who smake.

MAX M. BATZER Atty, at Law Philadelphia

A STATE OF THE PROPERTY OF THE Majority Roles

Your sentiments cells mine of many years and PIEASE don't drop the subjeet with this article.

My principal complaint with air towel shokers. I don't bother them, so why do they continue to bother me? My

> BEST COPY from the origina

one man; our fresh air (?) blower was no opportung carrectly. Eight hours of agging, Let's ban the buill

Jose Historianishusen Sparts Car Club of America Westpart, Conn.

How in blanes can professional maveles who souler from the elatin-smokers chieve modest gains as endined? Conters? CAR? Airline companies? How home some suggestions? We're ready.

Bysion William President Welch Associates, Inc. Houston

C I love you. Every airline should read Jand heed) your editorial.

BARBARA VORIS E. I. Du Port de Nemours & Co. Somhfield, Mich.

□ Amen!

Whiliam Goudy President Seyen Keys Co. of Florida Pompana Beach, Fla.

I Your editorial in the July issue of AR TRAVEL has struck a thost welcome note in my heart and lungs because it represents the first word that I have seen to separate the smokers from the non-smokers

011/69

on Smoking Is Imposed Vixon News Conference

A WALL STREET JOYENAL, Staff Reporter SHINGTON — President Nixon regement on the Federal Communications of the Proposed rule banding aret ads from radio and TV, but nite House imposed a ban of its own president's televised news confer-

Nixon said he hadn't had a chance valuate" the FCC proposal announced esday, adding that when he does, announce his position.

t shortly before the start of the news rence an aide announced there would smoking in the White House East before or during the half-hour ses-For the first time within memory, ays were missing from the press

garet smoke interferes with TV ple-

inside airplanes. I hope that your editorial effort will lead to a serious approach to this problem and that we non-smokers , may look forward to some consideration from the air-polluters.

Amoin F. M. van diecVen Raccinive Vice President European-American Banking Corp. New York

If The emokers have every right to smoke, but let's give non-smokers a brenk. This is my personal activide, and I have flown for as long as there have been diplanes.

MARY DAILY Seattle

II When I get home it takes me two or three days to get the eightette stink out of my clothes and hair. Let others smoke; I happen to prefer pure air.

Walter Myers
Executive Director
Forest Farmers Association
Atlanta

I I always hack and wheeze and thear finally produce a fake medical card stating that I am to avoid smoke or bad air.

ALEN NACY
Fruchauf-Fischbach-Automation
Detroit

If Why do the civilines maintain a double standard against eight stackers? Don't they realize that eights are to most travciers only as objectionable as eightettes are to the likes of you and me?

JUNEMIAH RANDALL

I Just a note to congratulate you on your anti-smoking piece. As you may know, I did quite a series on this, but I am afraid it had little or no effect. I do hope you have better results.

LEAVITT F. Monnis
Travel Editor
The Christian Science Monitor
Boston

A Union View of Service

The Air Line Employees Association, representing 12,000 office, clerical, fleet and passenger service employees in this country and Canada, doesn't think much of your May editorial, "The No-Hitch, All-Smiles Service Ideal."

We don't believe the service is quite so bad as you picture it to be—certainly not when consideration is given to such problems as heavy traile, inadequate equipment, mortities of safety, chronic low wages, poor working conditions and the lack of security that breeds rapid turnover. We don't deny, of course, that poor service exists but we hardly think this is due to "excessive union power" or that it can be cured with any of the artificial marale hausters now in vogue.

Another trade publication reports that TVA's "Happy Money" program is costing \$20 million. When only \$1 million is being

handed out to employees, can there be an doubt that this is merely another advertising effort and not a gengine employee henceful (Far from booking employee morale, the pressures and competition and frustration raised by this program will actually have the opposite effect!)

Our own TWA mentions (teletype openitors) have been declared ineligible to compote for the prize money because they are not in contact with the public. Well, we aren't raising a lius alant this because what we really object to is the company's acceptance of the idea that happiness can be bought . . . its substitution of gimmickey for honest concern. Real happiness, as we all know, depends on self-respect. And until management learns this basic truth and starts treating employees as equal partners instead of commodities it will get to peace from labor. Let us hope this day comes seen, so that we can dispense with such phony "shot in the ann" remedies as "Happy Money.

EDWIN H. ROSER
Public Relations Director
Air Line Employees Association
Chicago

No Refuge from Movies

Your recent article on in-flight entertainment in the July issue of Ars TRAVEL prompts me to make a few comments.

My favorite airline has the habit of showing movies on the longer flights. To my annoyance when I have been able to secure my favorite seat—namely, the fight front seat—soon after takeoff the movies start. I am asked to turn off my reading light or to pull down the slade of the window or to move to the rear of the plane where the lights won't bother the other passengers.

A few weeks ago I thought I would change from my favorite airline to another airline, and I was successful in securific the right front seat. Sure enough, after we had gained our flying altitude, the movies came on and the stewardess kindly asked me to close my blinds or move over to another section of the plane.

Then after the movie was over it became time to serve lunch, and then there was a great rush in order to get everybody served and get the dishes cleared away again for landing at our destination. Here again I was fooled because I thought that with this long, cross-country flight I would have a nice leisurely meal. But I had to sit in the dark and wait for movie time to end, and then rush through the meal.

Anyway, I thought I would share this with somebody, and it turned out to be you—not because I didn't like Curt Schleier's article (he writes well). It's just that I wanted to cry a little about movie-watching in the air rather than let the belief continue that everybody approves.

HARON KNUSEN American displact Convention Valley Forge, Pal

AIR TRAYEL, OFFICIAL AIRLINE GUIDE

over cabin air

"Travel Editor's Diary" of Sept. 9, gis has done well to point out the The second secon the air from the politition of tobacco nd the consequent suffering of nonin inhaling the polluted air. It is reasonable that the airlines have believed the wright" of the smokers are the confined cabin of an airther disregard of the right of the tors, just because the latter are in ority. It must be clearly noted that er and the right to smoke provided retain all the amolte within himself; no right whatspever to pollute the ing amagners with his smalle and ake his nonsmoking neighbor feel ole. (Pointe's judgment on Shylock's or a "pound of the of Anteniol) By smoking the smoker has energising his right but grossly ng upon the right of his nousmoking ir to breathe the comperctively pure

segregation of smokers and nons is necessary. On the 547 jet airsmelting lounge should be set epert tive or six people can go and smolt ne. On a 707 a small smaking lounge two or three persons can sit and at a time should be provided. Smok-ould be prohibited on all Greyhound and such other public conveyances. steps are quite practicable and must presa.

C. M. Ramakrishna Columbus, Ohio

east chief.

deep appreciation for the list of airad the lusiness address of each disted Sept. 22 issue of the Monlier.

vel frequently by alr and an amixed time to see the cubins, com tourist rat class, political with stale teopeece rains is not only discussing to noners but unds discomfort and deprives of their rights to breathe pure sin ere the non-moles should have equal with the smother.

seems reasonable that the cirlines i take steps immediately to provide o protect the comfort and rights of Twite choose to breathe freely. This. e incurred of segregation that, to mo,

3 legal. s untide the life thouse the interest of sople council eliminating this public dee of smokers in all places.

(J. es.) Sura Durch Lockman, Car

maril cilien tion continued to pour continued to the pour continued on the pour continued on the continued of the continu

Smelling probe

Special to The Christian Science Monitor

Podoral driation Administration investigators will join with the Media, How Many Smokes per Flight? Education, and Welfare Department How Many Smokes per Flight? probers to study the effect of tabacco. smoke on the health and comfort of airline passengers.

on complaints, particularly from nonsmakers, not only about effects of tobacco smoke on passengers but even on erew members.

Information also will be gathered on number of smellers and nonsmollers about flights, personal atthudes toward smoling, and the amount and type of tobacco consumed by smokers.

\$10.00 \$1

smelling the air. All too often the odor actually approaches neuscating proportions as you are well aware. The discontiont associated with commercial sit travel is causing me to seek alternate means of travel including private aviation.

H. P. Mostofter Plagstall, Aria.

To the trevel editors

Mission accomplished!

All nine presidents of airlines written to today-as per list in Sept. 23 Monitor-with request to consider carefully decisions as to taking care of the rights of nonemokers in "Jumbo" planes.

Thanks for this careful list, which made the task much easier.

Imogene MeCalg Coder Depils, lowa

To the travel collect.

Thank you very much for your "Plea for smoking ourb on airliners." You should have included all empliing. On our less trip we had two eigevette smokers on our right, two in front of us, and two in the back of us. A close of emoly from New York to Sen Francisco, in which works in this, making - experience. cor trip on the circa min... Smokers are, in the transmission incomsidentia ordinary human beings. This does include all women smekers. I waispered to a steward, but he told me that's of no available

For thirk that smollers erhant be exparrand. They can be, if a will to do it is here. With partitions. If at the beeling of a trip to passenger would be asked to this he wants to smoke on the trip, he could be so relieves. After the finit court, that is Think was entreed, on aiding

I concur with Abelson's editorial (22 Dec., p. 1527), in which he expressed FAR spokesmen said they are acting concern over the effects of smoking on air pollution and the infringement of the rights of nonsmokers. As a frequent airline passenger, I have experienced the initial stages of acute asphyxia resulting from too many people smoking in a poorly ventilated aircraft. I wonder whether the automatic devices to provide oxygen used in airplanes are sensitive to these environmental conditions as well as problems of altitude.

It may be necessary to provide special smoking sections, or smoking flights similar to the railroads' use of smoking cars. Certainly if individuals are unable to regulate their own activities, it may one day be necessary for the industry or government to regulate the number of smokes per flight.

JACK WERROFF

Jackson Laboratory, Bar Harbor, Maine 04609

.. The situation that most irks me I think, is the airplane at meal time Pressurized aircraft cabin ventilating systems are good. No matter how good they are, however, I have yet to experience one that can stay ahead of the smokers. When I am finishing a good airline meal and enjoying it, I frequently have to hold my breath for the larseveral bites because some nerveu smoker close by has lighted a cigarett before finishing his or her meal, and spews smoke out ligo the restricte. confines of the cabin. Ugh! . . .

HENRY F. DONY.

Department of Anthropology, University of Kentucky, Lexington kry way to make portitions in es. They do not need to be dy can be made to shift. an impossible idea? I do not

Hayward, Calif. to the travel editors

ken the smoke from planes someone blowing smoke in my face. day the "majority" of plane

lithe nonsmoker be asked to solf from the smoker? It is no is causing the air pollution mose, and throat discounidri. and and I firmly believe that should be provided with a e. That might be one way to ir induigence....

for bringing the matter to

Mrs. R. S. Randel Mountain Lakes, N.J.

in the Aug. 16 Monitor, call-Ligainst smoking aboard airost timely.

fol my friends, are frequent and every one of us has the nt — unpleasant trips caused. te smokers.

a has been the center of many and we all are interested in che about it.

tuention of the offending passtewardess, to the problem, tause an emberrassing gitue-

feel that as a paying ousa right not to endure this con-in as a smoker has a right to to is to win?

that writing to the cirline eld have any result? At least, ters were forthcoming, the kild realize that an important gi to be solved. To whom do

sope you can give my friends edvice. For the nonsincker, l has become very unplanent e, cigar, and cigarette cames. .

cturior and so keep smakers we shall be very grateful for any advice. ers separated. They separate i do hope you will write about the problem and class, don't they? They again in the near future.

Glenn R. Pollpeter Fredericton, N.B.

A list of the airlines and their addresses were published on the travel pages of The Mans Kaufmann Christian Science Monitor, Copt. 23.

much interest and concern eiger, and pipe smoking, on airliners! I a the attitude of the airlines harves with you that eigerette smoking is oking in the new 747's. I observes enough, and long airplane rides see with their statement that have sometimes occuvery unpleasant with

that it is not breathed by the I tore to travel and have been locking it is impossible not to be forward to taking many more trips, but if the smeker sits next to you the airlines are now permitting eight and ed up compartments called the airlines are now permitting eight and ed up compartments called the airlines are now permitting eight and ed up compartments called the airlines are now permitting eight and ed up smoking I wall have to use other when when the smoker sits modes of transportation as I cannot stand sie and holds the eight eight from eights and pipes.

Miss Vivian E. Howe

Miss Vivian B. Nowe North Hollywood, Calif.

To the trevel editors

As I do a considerable amount of traveling, both in the United States and overseas, I enjoy your Monitor articles very much. In particular I wish to say how strongly

I agree with your "plea for smoking curb aboard airlines" in the Tuesday, Aug. 16, edition. My experience is identical with yours, and both my wife and I have suffered considerable discomfort.

It is to me a rather extraordinary thing that so many people, including my closest friends, who are normally considerate in in every way of the comfort of others, should fail hope easily when it comes to this matter of smooting. They seem to be entirely unaware of the unpleasant effect their smoke can have on others.

I hope all airline presidents will take note of your complaint.

Edward J. Waterhouse Wateriown, Mass.

These letters are just a representation of scores of other letters protesting smoke lunes on Litiners.

Smoking on Airlines Editor, MEDICAL TRIBUNE:

I should like to compliment your group on the excellent program that is being done on smoking. I have myself for many years been working on this same scourge in a variety of ways.

Recently, after reading an article in the magazine put out by Pan Am about their super transport, I sent them the enclosed letter. With the letter I enclosed the article [guest editorial] that appeared in

Their reply is also enclosed.

I am sure you will agree that if every one of your interested readers wrete to Pan Am and other airlines and protested the unnecessary air poliution, some results would be obtained.

your publication by Dr. Alton Ochsner.

Keep up the good work.

Stephen Fromer, M.D. Staten Island, N.Y.

In his letter to Pan American Airways, Dr. Fromer noted that the Pan Am mag-

azine article referred to rapid emptying of ash trays as a feature of the new jets. He wrote: "Since the passenger is a prisoner in his environment, it is unfair to expose him to more irritations than necessary. From the enclosed article ["The Time Is Now," a guest editorial in Man-ICAL TRIBUNE by Dr. Ochsner] you will note the present attitude regarding smoking as expressed by a leader in the medical profession. I, as a frequent passenger on Pan Am and as a stockholder, object to the fact that smoking is permitted in flight. ... At frequent intervals during an average flight the no smoking sign is illianinated and everyone obeys it. If they can obey it for short periods, they can do likewise for the long periods. I'm sure that Pam Am and all the airlines can make arrangements so that those who wish to smoke can be compartmentalized in some small area or can be given some breathing apparatus to be used if they desire to smoke and contaminate the atmosphere....

To his letter, Pan Am's vice-president, operations, replied: ". . . Recommendations such as you have offered are received periodically, Dr. Fromer, but unfortunately not in sufficient quantity to warrant any change in our or in general aviation policy of allowing smoking dursing flight. Please be assured though that should the time come that it becomes a majority opinion to prohibit smoking on aircraft, Pan American will not hesitate to take the necessary action resident to

Chain Smoker Is at nuelcome Visitor

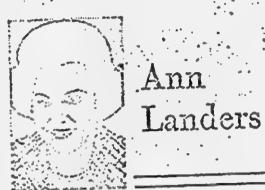
IR ANN LANDERS: Liven to this if me if I am crazy. A friend I had en in years came to visit me. I don't but I've been around a good many its and it never bothered me much, woman was something you have to believe. She was never without a toctween her lips.

own and sideways, out of her mouth own and sideways, out of her mouth out of her nestrils. He dropped on her clothes, on the rags, on the loth—wherever she went there was of cigaret butts. During every meal affed away while she ab-between I never saw anything also it. At I couldn't sleep because I knew she moking in bed and I was seared to she'd burn the house down. And there was that incessar! coughing acking. It made a nervous week of he'd turn blue and light another ci-

eve always been a fabily tolerant in but this woman and her eigerets o me. When she hinted that she'd come back to visit next year, I told couldn't stand another visit because r smeking. She said I was the crazinest ungracious person she'd ever that do you think?

-SMOKED GUT

AR OUT: I don't think you here crazy agracious. I think you here pushed



beyond the point of endurance and you let her know it.

I feel sorry for your friend, however. She is addicted to tobacco as surely as a junkie is hooked on dope, and she could come to a very sad end.

Smaking Masks?

I om impressed with your recent editorial against smoking on airplanes, as well as the anti-smoking letters published in your magazine.

Personally, I am for banning in-light smoking because it is such a nuisance for everyone—including smokers like me. Since there are those who must smoke, why not provide a special device for smokers as the cirities do for music and enterteinment fans? Masks with exhaust facilities, in various pastel colors, would be just the thing!

CHARLES SMITTHCALL The Daily Times Cainewille, Ga.

A Stacker Furnes

I just received your September issue and read all the letters to you from non-smokers. Didn't any smokers write to you at all? I am a smoker and enjoy my eigarette very much, on the ground or in the air. I feel that if I want to shorten my life span through smoking, it isn't any non-smoker's business. Sure it would be nice if the airplanes had separate compartments, just to keep those people quiet, but then they would find something else to complain about.

I always ask, if I happen to sit make a non-smoker, if he or she would make my lighting a cigarette. I have been asked not to shoke, so I did not. In fact, I have abstained on an overseas flight to Lin pell hing time for someone who loves to smoke. But the thing that irritates not a the non-smoker who has his habit. However, and enemy and chewing and rolling his position a very noisy way? Or do king, and then opening his month in your distant to start a conversation, with an allegating 10 miles long? Or chewing his hager-

Well, I just had to say my place about all the dear, good and sa-well-helicorn non-smokers. They are making the sock with their snobbish noses, and I am almost tempted not to be polite anymore by alking if I may light up.

Haide I. Blancidae Purish Travel New Orleans

Fall on Fuffing

I was not fortunate enough to read Martin Deutsch's July editorial about 7 assengers who smoke in flight, but I del see the resulting letters. As a confirmal ex-smoker who has suffered ad naturally please accept my congratulations. Why not take a poli so the airlines can really find out what the public tainks?

Now, if you can only persuade the tralines to have passengers who are checklarin line up parallel with the concease. Instead of across it (thereby blacking everyone), you will have achieved immertallyin the hearts of the masses.

Richand Ruininge.
Vice President—Services
Airborne Preight
Sontile

I enthusiastically support your realess who object to having to travel in a unpartments polluted by sinckers. Afficians are large enough now to be able to provide a non-smaking section to the group relief and comfort of many travelers. For a convey our request to the proper official

RICHARD H. PALVO Vice President Navigate Inc. Clearwater, Flu

Why do you suggest a non-markers' compartment in your editorial? Why not put all the smokers in a small can performent? They are the offend is. Each caparette they light shows their lack of regard for themselves, so their lack of regard for fellow passengers is not surpressed. Please follow through with this emaporar.

Listem William Goods Vice President Anixter Hadder fact Oakland

AIR TRAVEL, OFFICIAL AIRLING GOOD

Morienter 1919

EXHIBIT 2

Ralph Nader

Petitioner

Iris Clark Ingram

Doris Limoncelli

Mrs. Hiram E. Newbill

Henrictta R. Walker

for themselves and others similarily situated

Intervenors

TO: Honorable John H. Shaffer ... Administrator, Federal Aviation Administration

PETITION TO INTERVENE

This petition to intervene is made pursuant to 14 CFR Section 11.31. The original petition filed on December 8, 1969 sought, within 30 days, to ban smoking of tobacco on passenger-carrying civil aircraft. The petition was based upon three factors

- 1. Tobacco smoke on airplancs creates a health hazard for those who breath it even if they are not smoking.
- 2. Smoking on airplanes creates a substantial and unnecessary fire hazard.
- 3. The presence of smoking on airplanes is an annoyance and discomfort to those who are not smoking and unfairly and unduly discriminates against them.

The intervenors seek the right to intervene as interested parties with respect to all three grounds for the petition. Their affidavits, attached herewith as Exhibits A - D, establish that each one of them is highly sensitive to and has an intense negative reaction to the presence of tobacco smoke. Thus, with respect to the first ground of

the petition, each intervenor establishes by her affidavit, a direct correlation between tobacco smoke and deleterious health effects which she suffers.

Iris Ingram becomes dizzy, somewhat nauscated and unable to think clearly from even the smoke of one cigarette in a house and if exposure continues for any period of time tachycardia develops and oxygen therapy is required. Doris Limoncelli suffers nasal and throat irritation, headache, fatigue and reduced mental acuity from exposure to tobacco smoke. These reactions are quite severe, lasting as long as three days when exposure occurs as a result of a two-hour airplane trip where people are permitted to smoke. Idris Newbill has experienced in a recent flight, sickness, sinus congestion and pain, stopped-up ears and nausea and required three days to recover from the exposure. Henrietta Walker suffers fatigue, poor coordination, inability to concentrate, lapse of memory and drowsiness from exposure to tobacco smoke. Recently she flew cross country on a flight where substantial smoking occurred and required a full week to recover from the smoke induced affects of the flight. These women are vitally interested in the outcome of this petition which raises issues of health hazards created by tobacco smoke and hazards which are directly related to them.

All four intervenors, like all of us who fly or might fly, are concerned about unnecessary safety hazards. They are thus disturbed by the fire dangers created by the presence of smoking in the oxygen-surrounded and burnable passenger compartment. They are clearly interested parties in that aspect of the petition.

The four intervenors are most significantly interested in this petition because the continued presence of tobacco smoking on airlines unduly and unfairly discriminates against them. As a result of their allergic condition they are faced with a choice of travelling by airplane and suffering serious allergic reactions or foregoing travelling by airplane and the benefits of air travel which others freely enjoy.

and if smoking is present in the cabin must have oxygen administered - oxygen which she carries with her. Doris Limoncelli can travel by airplane only in an emergency. Idris Newbill can travel by airplane only in an emergency. Henrietta Walker can travel by airplane only in an emergency.

Each of these women is denied the advantages of air travel except in extreme emergencies. Each of them is subjected to substantial discomfort and serious allergic reactions when they do travel by airplane. This is clearly discrimination which occurs as a result of the presence of tobacco smoke in the airplane. It is equally clear that this creates unjust discrimination against these women, that these women are subjected to undue and unfair disadvantage and that continuation of these conditions is a violation of Title 49, USC Section 1374.

There is no just or fair excuse for allowing the smoking of tobacco on airplanes. No public interest is served by the continuation of this practice. Many public buildings including court rooms, libraries, and galleries have banned smoking. Many public conveyances prohibit smoking where it will affect others. President Nixon has banned smoking at his press conferences. The Surgeon General of the United States has condemned smoking as a health hazard. Intervenors

do not seek to prevent people from smoking. But where that smoking harms others and prevents others from enjoyment of federally regulated facilities, such as airplanes, the intervenors believe that they have a right to see that smoking in such cases is banned. Obviously the intervenors are interested parties in this petition.

Intervenors are also here on behalf of the millions of other.

Americans who suffer allergy miseries as a result of tobacco smoke.

Dr. Bernard M. Zussman of the University of Tennessee Department of Medicine noted authority on allergies, observed in a recent speech at the meeting of the American Association for Chemical Immunology and Allergy in Oklahoma City, that as many as eight million Americans who do not smoke suffer allergy miseries as a result of tobacco smoke from others. Therefore, intervenors request that their petition to intervene be accepted at once and that the Federal Aviation Administration publish immediately in the Federal Register and by news release notice that others who suffer allergic miseries from tobacco smoke may file, without further action, affidavits and statements with the Federal Aviation Administration and thereby become parties to this proceeding.

Conclusion

The original petition filed by Mr. Nader raised the problems created by tobacco smoke on airplanes for those of us who have average sensitivities to these noxious fumes. Intervenors here and the eight million similarly situated Americans are particularily interested in the petition and raise in this petition to intervene the special circumstances which affect them - circumstances which turn any airplane flight into a nightmare of allergic misery and which prevent these

eight million Americans from enjoying soir travels They urge the Federal Aviation Administration to act by January 7, 1970 to ban all smoking of tobacco on commercial air flights.

Respectfully submitted,

Anthony Z. Roisman

Berlin, Roisman and Kessler 1910 N Street, N. W.

Washington, D. C. 20036

Counsel for Intervenors

AFFIDAVIT

The undersigned liris Clark Ingram being duly sworm, deposes and says:

Address 875 Azalea Drive, Rockville, Maryland Age 55 years

For the past seven menths I have been disabled by multiple chemical allergies. I was hospitalized under the care of Dr. T. Randelph in Menrotin Hospital, Chicago, from September 15th to October 6th of this year for diagnostic studies. I have been under the treatment of Dr. E. Railin, Silver Spring, Maryland, since August, 1969.

I am so sensitive to gaseline, stake, all types of combustion gases, fresh paint, sprays and all types of posticides, tehaces, all types of plastic and synthetic fabrics, rubber and all petroleum products, that I am weable to go freely in public places.

Even if just one person is smoking in a house and I am not even in the same room I become extremely dizzy, somewhat nauseated and unable to think clearly. If continued over a period of time tachycardia develops and oxygen therapy is essential.

Only in embranc emergencies will I consider flying and then I am oblighed to request those passengers nearest me not to smoke because of my condition. If there is sucking in the plane cabin it is necessary for me to have congen administered. I carry oxygen equipment with me for energoncy reasons.

At this time, because of my extreme sensitivity to tebacco smeke, I would not consider airplane travel in any but the most dire emergency.

Iris Clark Ingram

Jane Y. Williams:
Notary Public
County of Fairfax - State of Virginia
My Commission Expires 4-5-73

1-ph/3-1-13

APPIDAVIT

The undersigned, Doris Limoncelli, being duly sworn, deposes and says:

My name is Doris Limoncelli, address: 2403 Old Trace Lane, Reston, Va., age: 45.

I am acutely allergic to tobacco smoke and other chemical inhallants. Exposure to tobacco smoke produces the following symptoms: masal and theat irritation, headache, fatigue and reduced mental acuity. The severity of the reaction depends upon the length of exposure time.

A two hour flight in the confined cabin of a plane is sufficient to produce quite a severe reaction, lasting as long as three days. Therefore, I fly only in emergency situations.

Doris Limoncelli

Decence B. Olly

The undersioned, Idris C. Rewbill, being duly sworn, deposes and says: Hy address is 4647 South 34th Street, Arlington, Virginia 22206. Kv are is 66. . For more than ten years I have been under the care of yarlous again doctors for alleries to foods, dust and molds, drums, tobacco smoke, and other chemicals in the invironment. The last time I had to travel in an airplane I asked the hostess. to try to seet me where I would have some protection from tobacco smoke but, of course, this was impossible. I had to breathe the fumes of tobacco smoke during the whole trip. This exposure made me miserably sick with confested and wainful sinus, stopped up ears and a feeling of smollen eardrums, and nausea. It takes three days for me to recover from such exposure. Because of this situation I will never travel in an airolane acain, except in an extreme emergency, so long as smoking is permitted. new hells Dated December 12, 1969 MCTARY FUBLIC STATE OF VIRGINIA CITY OF ALEXANDALA FRANK ISE BALLENGEF , III MY CONF. BXP 12-4-72

AVAILABLE

AFFID:VIT

The undersigned, Henrietta R. Walker, being duly sworn deposes and says:

My address is: 6117 Woodland Lane, Clinton, Maryland 20735 My age is 47

I am allergic to many things including some foods, food addatives, chemical residues on foods, molds, air torne chemicals, cigar and cigarette smoke to name a few. These cause some or all of the following reactions: fatigue, hives, irritation of my respiratory system, drowsiness, lack of coordination, irritability, or lapse of memory.

Cigarette and cigar smoke cause me to feel fatigue, poor coordination, inability to concentrate, lapse of memory, and cause me to fall asleep.

Each year I travel to Florida by train instead of flying, because I cannot tolerate the cigarette smoke on planes.

A year ago I flew to San Francisco, California and back.

On the trip out the plane was not crowded and the density of smoke was not as great as on the return trip. I was so ill when I returned to Karrland that I could Not continue my trip to North Carolina for three days. It took me a week to fully recover.

There are no shots which I can take for cigarette smoke. The only

thing I can do is avoid it. I will not fly unless it is an emergency.

MOTARY PULLIC

Junear To Russia

my Commission Errore 7.1.70

Henrietta R. Walker

Date

12-13-69

EXHIBIT 3

AVAILABLE of bound volume

January 72, 1970

Mr. Edward t. Hodson Chief, Asgulation Staff Flight Standards Service FAA Washington, D.C. 20590

RE: FAA Docket No. 10012

Dear Hr. Hodson:

Enclosed herewith are additional documents to be included in the record with regard to the above petition.

Exhibit F contains copies of correspondence which i or Mr. Hader have received and news articles concerning this petition all of which indicate the widespread public concern with the continued presence of smoking on airlines. These unenimous expressions of support for the objectives of the petition are eloquent evidence of the public's concern with this problem and of where the public interest Hes. As our petition clearly deconstrates there is no public interest to be served in allowing smoking inasmuch as the federal government has acknowledged that smoking is a health hazard. This right not be a sufficient reason to pan smoking absent some evidence that those who do not smake personally suffer as the result of others smoking. But, where as here there is a public outery against permitting smoking in ... airplanes, there is no alternative to the federal government but to ben smoking. Any other response would place the government in the Intolerable and indefensible position of encouraging the perpetuation of a recognized health hezard at the expense of the general public which is forced to suffer disconfort, at the very least, from the snoke of others.

Exhibit 6 contains excerpts from an Aircraft Accident Report by the Civil Aeronautics Board involving the crash of a united Air Lines flight in 1964. The report concludes that the "probable cause of this accident was an uncontrollable inflight fire of undetermined origin, in the fuselage, which resulted in a less of control of the aircraft (p. 1). The report also found that the inflight fire occurred in the passenger compartment (p. 15), that a substantial portion of the materials in the cabin were burned (p. 2-10), that one of three possible causes of the fire was ignition of lighter fluid carried by a passenger (p. 12) and that a passenger that fell from the aircraft before impact had charred clothing as a result of the inflight fire which could best be duplicated by igniting clothing which had been seaked in lighter fluid (p. 11). The report was unable to state conclusively that the ignition of a cigarette lighter on the flight caused the fire but the very possibility underscores

the danger created by ignitions of any kind within the airplane cabin. It should not be necessary to actually prove that deaths were caused by allowing passengers to light digarattes on airplanes in order to impose a ban on sociding. The mero presence of a threat, as clearly seen in the waited Air Lines accident, is all the justification which the FAR should need to take irrediate action.

Exhibit h is a portion of the transcript of bearings by the DAS with rejard to the inited Airlines crash referred to in Exhibit b. In these excerpts a vitness for United Airlines Indicated that of the three possible sources of the inflight fire (kerosene (jet fuel), hydraelic fluid and lighter field) there was no evidence that the hydraelic feel or jet feel leaked. Another witness indicated two instances in which use of disarctte lighters of a particular design had caused inflight fires and also insicated that another United Airlines flight had hed a disarctte caused fire in the passenger comperiment. These risks created by allowing the lighting and sucking of disarcttes on airplanes are real and there is no reason why the public should be forced to accept these risks in air travel. As long as this practice is allowed to continue the DA has not insured the highest degree of safety in air travel.

Exhibit I contains portions of the accident report prepared by the Mational Bransportation bafety Goard regarding the collision of a Piedmont flight and a private plane and portions of the transcript from the flight recorder of the Fleoront plane. Falle the accident report (finds that there was no evidence of an inflight fire before the accident (p. 17) the flight recorder clearly reveals that a cigarette fire In an asutray in the cockpit did occur within a sinute of the collision. The accident report makes no mention of this but does . dwell at great length on the visibility from the Fiedment plane and the possibility that it could have taken crasive action if the private plans had been sighted (p. 17-28). These studies indicate that if the crew looked directly at the private plane they could have seen it 35 seconds before the collision (assuming no clouds) and if they were looking straight aleas and their vision was unobstructed by clouds they would have seen the private plane 10.1 to 12 seconds before impact (p. 13-20). Most significantly the report enserves that if the craw shifted its eye position - for instance, I would note, to determine the scurce and cause of the ashtray fire in the cockpit - they would not have had as much, if any, visibility. The danger signals are quite clear. The phasence of secting in the cockpit represents a possible distraction as the result of an ashtray fire, a wayward ash, remake itself or innumerable other scouling related possibilities. There is absolutely no reason for the thing to wait until 62 people (as-were killed there) are killed as a direct result of smeling distracting the cockpit craw to recognize the imminent conger caused by the presence of such smoking and the need for an immediate ban on scoking in airplanes. Again the issue is was possible justification could the

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severagest have to encourage sociling by allowing it to exist where it is a source of Cauger to others.

daping to the effect of seeking or those with pre-existing medical conditions, particularly the allergic. As the patition for intervention indicates where are at least 8,000,000 A ericans who have speak related allergies. The additional data included in this exhibit establishes that fore than 30,000.000 magicans have pre-existing medical conditions which are adversely affected by the presence of teracco socia. The FPA cannot simply turn its back on this serious problem affecting millions who travel or would like to travel by air.

Exhibit A incorporates by reference cortain medical articles which effor further substantiation to the fact that the mealth of non-probars who have no special sensitivity to tobacco smake is seriously endangered by being forced to breathe tobacco smake.

Exhibit L consists of a news release and an in house publication of the Intional Academy of Sciences describing a recent report released by LAS underlining the dangers of carbon menoxide. Our original petition indicated that the carbon monoxide concentration is thousands of tires higher than the 10 parts per million regarded safe by this report. Significantly possible effects of an excess of carbon monoxide are impairment of the brain and slew down of a person's reflexes. Thus the effect of carbon monoxide concentrations in telecos stoke could impair the safety of those on the airplane by impairing the effectiveness of the crew. In today's faster planes instant reflexes are absolutely essential to deal with possible emergencies. Filot and crew reflexes should not be impaired in any unnecessary manner and exposure to tobacco stoke involves just such an impairment.

It is my understanding from our previous discussions that these meterials (marked with Exhibit letters following those in the petition) and this letter are to be made a part of the record which the FAM will consider in reaching its decision on this petition.

I look forward to your favorable action of this petition in the near future and ment to thank you for your time and interest at our previous meeting.

Sincerely,

Authory Z. Roisman

AZR:eb enclosures

EXHIBIT F

A NONPROFIT CÓRPÓRATION FOR RESEARCH IN INFORMATION SCIENCE

AVAILABLE

December 9, 1969

Mr. Ralph Nader c/o Mr. A. Z. Roisman 1910 N Street, N. W. Washington, D. C.

Dear Mr. Nader:

I salute you! As a businessman who must travel, suffers from asthma, and is specifically allergic to tobacco smoke, I was delighted to read in the morning <u>Washington Post</u> about your petition to the Federal Aviation Administration to ban smoking on all civil flights carrying passengers. On doctor's orders, I must prohibit smoking in my home and in the office, but when it comes to meeting my business obligations to travel, I have no choice but to expose myself to a severe health hazard.

This note is sent along since I wanted you to know that your efforts on behalf of the asthma and emphysema sufferers are appreciated.

Sincerely,

Walter H. Johnson

5302 NORTH 43RD STREET - PHOENIX AND AND ASOLD

December 16, 1959

Er. Ralph Hader Attorney at Lew Winsted, Conn.

Dear Hr. Mader:

A news story in the local ARIZOM AMPUBLIC for December 9th reports that you have filed an 18 page patition before the Federal Aviation Administrator requesting the banning of smoking on commercial airliners.

In support of your action, I would like to state that, as one of the nonmothers concerned, that emoking in any enclosed place causes me to become
ill. I am an employee of a local Federal agency, and recently suctained a
very severe toxic reaction when another employee who smakes regularly was
located directly across from my dock. It was necessary to seek nelical attention, and the damaging effects remained for about 2 weeks. Recently I again
became ill from another employee smoking in the same room, resulting in a
feeling of neusea and extensive and racking chest pains. It is several days
as much as possible, by remaining out of the office and keeping in the fresh air

A large number of non smoking friends have told me of the ill effects of exposure to smoke in enclosed places. Their reaction is extensive nauses, and considerable irritiation in the lung areas.

At the present time it would be impossible for me to even consider taking a flight abound a commercial airliner, due to the amoking situation. There might just as well be a law prohibiting me to fly, as long as smoking is permitted increasing in permitted in any manner, abound these flights.

there is considerable evidence that the toxic reaction to tobacco smoke may be use to the carbon monomide produced, and the symptoms of the victims are consistent ith this. It became necessary for mo to continue seeing a physician due to my continue seeing a physician due to my cople suffer from this.

ou may make any use you wish of this letter, and I would be happy to sugar out deposition, or assist in any way, in your petition.

Yours very truly,

Charles J. Smith

MED

ARCH COURT, E.MARYLAND 20850

December 15, 1969

Mr. John H. Shaffer, Administrator Federal Aeronautics Administration 800 Independence Avenue, S. W. Washington, D. C.

Dear Mir. Shaffer:

Because of come of the recent publicity about regulations regarding smoking on scheduled airlines, I am enclosing a copy of a recent letter I sent to IV A. Your comments would be appreciated.

A number of years ago I was involved with a group of physicians and health emports in the midwest who positioned for the removal of free eigercties that at that time were dispensed on the tray of each meal served in flight. Fortunately, this was quickly accepted as a reasonable thing and all airlines discentiated this practice which had been carried on for so many years.

Sincere regards,

Keith W. Febnert, M. D.

Enclosure

bee: Apthony J. Roisman, Attorney, 1910 N. Northwest, Washington, D. C.

November 13, 1969

Director, TWA Bonus Ballet Promotion Transworld Airlines 1735 Estimore Avenue Kansas City, Missouri 64103

Dear Sir:

Before I give you my constructive comment for improving TWA service, let me congratulate you on your fine promotion. The radio ads are clever and effective and I hope you are getting good results from the promotion.

During my use of TWA service this week (Flights 425 and 193 on November 7, and Flight 426 on November 9) I heard the captains make the following announcement—nearly verbatim so I must assume it has "been approved by top management."

The announcement was as follows: "I've turned off the no smoking light during our delayed departure and you may now light up and smoke."

What he should have said is "I've turned off the no smoking light" -- but instead he gives a commercial -- and a very effective one... you may now light up and smoke!

This unintentional encouragement by the captain asks the passengers to smoke-and they do. The end result is to overload the air conditioning system making it very unpleasant for the majority of passengers who don't smoke. I resent being forced to breath polluted air!

The American air transport industry is soon to begin a program to stop enternal pollution by altering their jet engine enhances. Why not stop internal pollution by forbidding your present tobacco "commercials"?

And, while I'm talking about "forbidding things," during my flight today the stewardeso was smoking while on duty. May I assume that is against the rules?

Director, TWA Bonus Ballet Premotion Nevember 13, 1969 Fage 2

I hope this suggestion will bring better air travel service for TWA.

Yours for better and healthier service,

Keith W. Schnert, M. D. Vice President and Director of Recearch and Development

KWS/ojw

UTIVE OFFICES

December 16, 1969

Mr. Ralph Nader 53 Hillside Avenue Winsied, Connecticut

My dear Mr. Nader:

My congraintations on the position which you have taken in regard to smoking on commercial aircraft. I am convinced that the tobacco lobby must surely be the most efficient in the country. Why HEW should ban cyclomates whose karmfulness is questionable and not ban tobacco whose harmfulness is proven is past understanding.

I wish the FAA had the guts to ban all smoking on the commercial airlines. It would not only be an elimination of a fire hazard but it would also go a long way in preventing ulcers for some of us who find ourselves so irritated by being confined to a smokehouse in the sky that our health is endangered and our life shortened. Nobody is as rude and selfish as the tobacco addict. I feel as a paying customer I am as entitled to pure air on the aircraft as I. am to good food and safe transportation.

Hurrah for you. Keep up the fight.

Sincerely yours,

President

BJ:jcl

cc: Federal Aviation Administration
TRAVEL WEEKLY

al bound volum

BERNARD II. ZUSŠIJAN, M.D., F.A.C.A., F.A.A.A. INTERNAL MEDICINE - ALLERGY 40 NORTH PAULINE STREET MEMPHIS, TENNESSEE 38105 TELEPHONE AC 901 / 272-2030

January 6, 1970

Mr. James F. Rudolph Director, Flight Standards Service Federal Aviation Administration Washington, D. C. 20590

Dear Mr. Rudolph:

I have received this letter from Mr. Anthony Z. Roisman, a copy of which .

Mr. Roisman sent me a copy of the petition requesting enactment of a rule ebolishing the smoking of cigars, cigarettes, and pipes on passenger carrying flights of civil air craft.

I cannot agree more wholeheartedly with this petition and wish to strongly recommend that it be enacted.

I am sending you several copies of my reprint on Tobacco Smoke and how it affects the allergic population.

As the petition is self explanatory and explains in great detail, I am merely emphasizing on additional hazard due to tobacco smoke to which allergie prople are especially prone.

. Very sincerely yours, Berne m. Zymen Bernard M. Zussman, M. D.

cc: Mr. Anthony Z. Roisman

C. T. HELLMUTH, C. L. U.

THE BARLOW BUILDING

5454 WISCONSIN AVENUE

WASHINGTON, D. C. 20015

NT AND PROFIT-SHARING
IN DISABLITY INCOME

C DEVERRED COMPENSATION

December 29, 1969

Mr. John L. Shaffer, Administrator

Federal Aviation Administration

800 Independence Avenue, S. W.

Washington, D. C.

Dear Mr. Shaffer:

I write to voice my strong approval of Mr. Nader's petition to ban smoking on all commercial passenger flights.

Smoking creates a health hazard for everyone. In this free country, those who wish to continue to smoke in spite of the overwhelming evidence of smoking's deleterious effect on health, have that right. But they do not have the right, in my view, to inflict the effects of their heinous habit on other citizens which is precisely what happens when smoking is permitted on commercial flights.

At the very least, you should move immediately to direct the airlines to require their pilots to enforce the no smoking ban when the plane is crowded and/or the air conditioning systems are not working properly.

And, you should move to ban all smoking on the ground while waiting in line to take-off.

Cordially yours,

C. T. Hellmuth, C.L.U.

WASHINGTON, D. C.

BALTIMORE, MO.

AREA CODE SOL

AREA CODE SOI

654-6700

CTH/af

cc: Mr. Anthony Z. Roisman

AVAILABLE

. January 7, 1970

Federal Aviation Agency 800 Independence Avenue, S.W. Washington, D.C. 20553

Attention: Mr. James F. Rudolph

Director of Flight Services Division

Gentlemen:

I understand that an application has been filed with the Federal Aviation Agency seeking to prohibit smoking by passengers on flights in the United States. I should like to record my strong support of this application to ban smoking on aircraft.

I would estimate that during 1969, I made at least 20 round-trip journeys from Washington, many of them involving trips of several thousand miles. As a non-smoker, I find the presence of smoke in the passenger cabin to be extremely offensive and physically irritating (in that smoking causes my eyes to tear). It is generally necessary for me to work during the course of the plane trips that I take, and there is no doubt but that the presence of a smoker next to me on the plane has a marked and adverse impact on my ability to work effectively.

I am not in a position to comment on the safety implications of smoking, but it seems obvious that smoking by passengers necessarily increases the hazards of flying. Equally important is the fact that smoking imposes considerable involuntary discomfort on the increasing number of people who find smoking to be an unpleasant and offensive habit. At the very least, it would seem appropriate for smoking to be barred from all parts of the passenger cabin, with the possible exception of an area set aside for smokers, which area would be scaled off from the balance of the cabin and which could be supervised from a safety standpoint.

I frust that the Agency will take into account the stronglyheld views of those of us who travel frequently and who are subjected to extreme discomfort by smoking in the passenger cabin, Page 2
January 7, 1970

and that the Agency will see fit to exercise its authority in prohibiting smoking on flights under its jurisdiction.

Very truly yours,

Arthur J. Rothkopf.

AJR: sl

bee: Anthony Z. Roisman, Esq.

TUTE'INCORPORATED

Mt. Auburn Street

Cambridge 38, Massachusetts

Area 617, Tel. 876-6776

20 December 1969

Senator Mark O. Hatfield U.S. Senate Washington, D. C.

Dear Schator Hatfield:

Congratulations on joining Messrs. Banzhaf and Mader to provide seggregated sections for smokers in commercial (regulated common carrier). airlines. For the non-smokers, with the larger planes, this situation has become intolerable.

For your information, I enclose copies of my letters to Mr. Nader and an earlier letter to the President of American Airlines (and its evasive answer).

You may find that my letters contain some ideas that will be useful in your campaign. Please feel free to use the ideas, or to quote from · The letters.

I will appreciate a copy of your Bill in this matter.

Thank you, and good luck!

Sincerely yours,

Calvin N. Moors, President

Encl:

INSTITUTE . INCORPORATED

Mt. Auburn Street

Cambridge 38, Massachusetts

Area 617 Tel. 876-6776

20 December 1969

Representative Andrew Jacobs House of Representatives
Washington, D. C.

Dear Mr. Jacobs:

Congratulations on your movement to provide soggregated sections for smokers in commercial (common carrier) airlines. For the non-smoker, with the large planes, this situation has become intolerable.

For your information, I enclose copies of my letters to Mr. Nader and an earlier letter to the President of American Airlines.

You may find that my letters contain some ideas that will be useful in your campaign. Please feel free to use them.

I would appreciate a copy of your Bill on this matter.

Thank you, and good luck!

Sincerely yours,

Calina, J. Missers

Calvin N. Mooers

Encl.

A NONPROFIT CORPORATION FOR RESEARCH IN INFORMATION SCIENCE

INSTITUTE INCORPORATED

ourn Street

- Cambridge 38, Massachusetts

Area 617 Tel. 876-6776

- 20 December 1959

h Mader on, D. C. Subject: Seggregated Smoking in Airlines

Mader:

thank you for your wonderful work in the past!

ote the enclosed copy of my letter to President of American on the subject of smoking in airlines, and the "blah" answer in return. Please feel free to quote from any of the ideas ter in your work! Particularly note the following ideas:

- a. In an airline, one is <u>compelled</u> to endure the smoke from others—there is no alternative. Cdd for a <u>common carrier</u>!
- the smoly air (perhaps adding only a little fresh air in each cycle). I.e., it would appear that they try to achieve a certain amount of air movement rather than full air change.
- t. Airlines have <u>institutionalized</u> smoking. Thus any ordinary person feels odd indeed to complain about a matter that the pilot and crew seem to approve of. And the company too:

tite apart from any medical consideration. I consider that being endure the painful and nowious smoke, without right to move away, itutionalized situation sponsored by the airlines in a misguided viewpoint-this constitutes an assault on my person and my privacy.

an more than delighted that you are joining Mr. Banzhaf, Senator and Representative Jacobs in this campaign. I shall write to em, giving them my encouragement. (M.Y.Times, 18 Dec 1969).

Sincerely yours,

Calvin 7. Tropers

Calvin N. Mooers, President

r of 44 Nov. to American Airlines, & answer. Banzhaf letter. r. John H. Shaffer, PAA.

A NONPROLIT CORPOPATION FOR RESLARCH IN INFORMATION SCIENCE.

20 December 1969

Subject: Smoking in Airlines

ohn Eanshaf 3rd Er. J. H. Shaffer FAA ngton, D. C.

c. Banzhaf:

ngratulations on your new campaign in regard to smoking on the os! (N.Y.Times 13 Dec 1969) I hope and trust it will be as tial as your "equal time" campaign in regard to smoking in T.V. sials.

lease let me help by furnishing (perhaps) some additional ideas in it of the proposition that smokers should be seggregated in reial airlines. Thus, please feel free to quote, use, or adapt leas from the enclosed letters to American Airlines and to your gue in this recent action, Ar. Ralph Mader.

ince the New York Times story did not indicate your present address. sing this indirect method. I hope my letter reaches you!

Sincerely yours,

Calin L. Tursers

Calvin W. Mooers

letter to R. Mader 20 Dec 1969, and enclosures.

Could you send me a copy of your "petition" to the FAA?

A NONPROTIT CORPORATION FOR RESEARCH IN INFORMATION SCIENCE

burn Street

Cambridge 38, Massachusetts

'Area 617 Tel. 876-6776

20 December 1969

J. Mullins

Subject: Spoking in Mulines

erketing

n Airlines

d Arenue

t. N. Y. 10017

. Mullins:

the you for your lotter to me of Hovembor 25, though I must say content was not really very helpful in the two trips that I made by lotter asked you for relief.

nay be interested in my response to the news that Moders. Ralph of John Banzhaf have petitioned the FAA Administrator in regard to on of airline smoking, or its seggregation. Thus see the enclosed

as repeat from my lotter to Mr. Shaffer: "Clean air is elean air. & contain tobecon suchs. I, my family, and many others would to actions which would make air travel a journey of confort and

"hopeful" view that "more space" and "more effective ventilation" sufficient in the new planes -- does not indicate that you understand lem. (1) Which of our flying will continue to be on RU-9's, 737's, to., and not the "new planes" (2) "Diluted smoke" is still to stink. Ask a non-smoker.

r. Nader points out, health and sefety reasons would be sufficient toking in planes. The alternative, as you know it, is separate ents for sackers, together with suitable central of the ventilating so smoke done not enter the non-ampling compartments.

we appreciated the load that American has taken ever the years reservice and confort for its travellers-here is the next even he lead.

Sinceroly.

Carmina T. Turrence

* Calvin N. Moders

, A NONPROPEL COPPORATION FOR RESEARCH IN INCOMMATION SCHARGE

INSTITUTE INCORPORATED

it. Auburn Street

Cambridge 38, Massachusetts

. Area 617 Tel. 876-6776

20 December 1969

Subject: Seggregation of Smokers in Airlines

. John H. Shaffer ministrator deral Aviation Agency shington, D. C.

ar Mr. Shaffer:

I am writing in support of subject matter of the petitions presented you by Mesers. Banzhaf and Mader in regard to the need for seggregated ace in cirlines for the minority that insist upon smoking while in flight.

It is an imposistion on the public for your regulatory agency to allow a common carriers to allow (and indeed 'institutionalize') the situation or smokers are allowed in airlines to produce nowious and disgusting nes-and where such funes are circulated and recirculated among passengers are immobilized in flight, and who have no reasonable recourse.

Enclosed, you will find my letter to the President of American Airlines which I, as a frequent passenger on his and other airlines, complain but the situation, and ask for advice or help. You must agree with me at the answer which I received in return from Mr. Mullins is of little afort. What should I do on my next trip? Furthermore, this business but "more effective ventilation" is a sorry joke. We already have begonerations of "better ventilation" in the 707 and succeeding jets. eyes still sting and water. My clothes still stink when I get home.

- Also enclosed is my letter of encouragement to Mr. Mader, in which
 impress some additional propositions in support of seggregation of
 kers. The airlines that you regulate have no right or necessity to
 mult the non-smoking passengers with a painful, disgusting, and possibly
 calthy atmosphere.
- * Clean air is clean air. It doesn't contain tobacco smoke. I, my ily, and many others would appreciate regulatory action which would a air travel a journey of comfort and civility.

Sincerely yours,

Colina a. Wooded

Calvin N. Hooers Prosident

ies: Nader, Banzhaf, Jacobs, Hatfield, and others.

A NONPROFIT CORPORATION FOR RESPARCH IN INFORMATION SCIENCE

AVAILABLE al bound volume

ROCKFORD RESEARCH TRATED TO THE TREE DEFENDANT FOR

Cambridge 38, Massachusetts

14 November 1969

n Airlanes

rd Avonue k. R. Y. 10017

a frequent traveler on your lines. I am outraged and resentful about irline service.

TAY as an air travelor am I unablo to escape being trapped and lined in a nomious and painful concentration of tobacco smoke -ci by a minority of other passengers, endlessly recirculated by your reconditioners -- a nuisance which is encouraged and institutionalized ir company policies. I hate it. I am not alone. Do you like this image?

There is no escape. For a professional man who must travel, there is sonable alternative to air travel. Polite requests to your stewardesses assenger personnel for direction to No Smoking areas on planes have met ineredulous stares. No lenger can we retreat to such areas as the es of the DC-6 or 7 which were often free of suchers, hodern jets are crowded, with cretemers packed ever more classiv. Your "ventilation" not provide clean fresh air. Even a New York to Posten trip with a issenger load means smarting and running eyes, a headache, clothes and a stinking and recking for hours. The experience is painful, distressing, of thy -- and completely unnecessary!

Why must the travelor in the wide, clean, sky be subject to such pollution? ing is not allowed in city busses, streeteers, subsects, schools, thorters, es, churches, and most other public closed spaces. Spests to our home requested not to smake, and they do not. In a text, the driver can be d to stop sacking, by law. Astronauts on the way to the moon don't snoke, places where smoking is allowed provide an abundance of space. good ilation, or the priviledge of movement at will -- you don't. Irains, though bankrupt, provide a modesnowing area for their passengers. not modern jet eireraft?

This is a polite request. Can you help me?

. Sincerely yours.

Califur Miggert

Calvin N. Mooers. iresident

November 25, Hr. Calvin N. Mooers President Rockford Research Institute Inc. 140's Mt. Auburn Street Cambridge 38, Massachusetts Our President is away from his office right now, but

Dear Mr. Mooers:

I know he would want me to acknowledge your letter in his absence.

Thank you for taking time to tell us of your feelings on the smoking problem. This is a serious situation and the airlines have given considerable attention to it. We are considering the possibility of installing a special section for smokers or non-smokers, although we feel the problem will be considerably lessened with a much more effective ventilation system than is now available on today's aircraft. This, plus higher coilings and more space will hopefully relieve the suffering of our non-smoking passengers.

We certainly look forward to serving you again soon, Mr. Mooers. It is a pleasure having you on board.

Sincerely,

F. J. Mullins

Senior Vice President

Marketing

al bound volu

December 12, 1959

Federal Aviation Advantstration 800 Independence Avenue, S.W. Vashington, D.C.

Gentlemen:

I read with great pleasure and approval the news column of December 9 in the <u>Unil Street Journal</u> concerning the efforts of the Ralph Heder to petition the RA to ben exciting on connercial nintineus for reasons of both health and safety.

The I also make a plea on other grounds? -- the sheer discomfort and annoyance to non-ambiers of being tropped in a confined space with smokers. I don't know thy the FAA considers the rights of people the smalle and poison the course air about planes to be superior to the rights of non-ambiers, but I would be grateful, for a statement of the FAA's policy and reasoning on the matter. For your years, I as one who does a lot of traveling and it a non-ambier, have bed they I consider by rights violated on commercial planes by baring to inhale second-hamb the smake of people sitting next to me. In many cases I have had the ill luck to be in the middle seat of the ceach section and have had smakers on either side of me and on a long flight in such conditions, no one but a non-ambier can appreciate the problem. The fact is that one energes from each a flight theroughly musested.

I have thought often of writing the FMA about this problem, but like so many other people concerned about this or many other problems that are clear abuses of the public interest, I have been discurded by the thought that there is no possible way for an individual to move the regulatory agencies to cetion. In. Hader had proved me and everybody else wrong on this point, and I salute him for it. I hope you will agree with him that smoking on airliners is not only a health and safely hazard which can no longer be defended, but that it is also a violation of the elementary rights of other people.

Sincerely,

Jawas D. Recanar

Senior kenuarch Fellow

Janes 1. Nacena

e: Jir. Ralph Hoder

The Topographe Harriet M. Hennedy

The Henorable Educad U. Brooks

PAUL LOUIS GOMORY 5600 OGDEN ROAD WASHINGTON, D. C. 20016

Mr. Maday you have my Support 6 eliminate Snishe (kunger. et hoursting murane and prise. an all transportation of a public Character- soperates up in the first on, but out of it is a plane, I am sine you Could obtain mere letting lete this if you could hint that there is a Silent " Sperpular bilerally but to be compet up and smelered & deall

again, you have my

ASBURY COLLEGE

DENNIS F. KIMLAW, PH.D., President

Dec. 10, 1969

Mr. Ralph Mader National Press Bldg. Washington, D. C.

Dear Mr. Nador:

Keep up the good work. Smoking on airliners has been a real aggrevation to me and the many people I take on tours abroad. It is sickening to sit next to a person and have to inhale the smoke coming from the lighted end and also from the mouth and nostrils of the smoker.

Perhaps we should strive at least for non-shoker compart-

I em leaving for the Near East on Doc. 13 with 100 persons and none of them snoke. Yet, we all will feel like smoked herring when we get back...please push this issue for all its worth. We would be glad to help with letters and petitions.

Sincerely yours

A. Hanke

#303 Linden Drive Widland, Michigan 48640 December 10, 1969

The Federal Aviation Administration Washington, D. C. 20510

Re: Smoking on Airlines

Centlemen:

With personal and hopeful interest I noted in the December 9, 1969, issue of the Wall Street Journal and our local newspaper in Midland that Mr. Ralph Mader has pstitioned your agency seeking a ban upon sucking in passanger airplanes. I rarely write my congressman or federal and state agencies but do want to express my strong support for that which Mr. Mader is seeking to control.

I fly approximately 100,000 miles each year on various mirlines throughout the United States in connection with my employment as a labor attorney with the Dow Chemical Company. I am also a non-smoker by choice and desire to resear such. I can recall appareably too many years ago than emoiding in public conveyances was restracted to the last three or four rows. This I assume was intended for the purpose of conveniencing these the did not want to be polluted with tobacco smoke and that was at a time prior to the Surgeon Ceneral's resert on the unhealthy effects of smoking. How that verticus federal agencies and the Congress have recognized and taken efforts to bring public acareness to the harmful effects of smoking, it is startling that the Pederal Aviation Administration has permitted increasing and permissive smoking by passengers in the closed confines of airplanes. Although come airlines through their stemminenes infrequently suggest that eight smoking should be avoided, no, effort is apparent to control smoking in general.

Then one departs from an airplane, he can expect to rack of the stanch of tobacco for the balance of the day and until his elethes have gone to the eleaners. I must say that I have on many occasions been personally eshablesed because of the non-racing and religious groups them I visit in such condition after traveling on an airliner.

The Federal Aylation Administration Page Tuo December 10, 1969

Tany times when I return home my wife and children are repelled from me until I have removed my emoke-filled clothing. In jost, several of my co-workers have suggested that if airline passengers want to emoke and thereby pollute the air for non-smokers and those who want to avoid the harmful effects of tobacco smoke, that such smoking passengers or the airlines chould provide the smokers with polyethylene bags which they can place around their heads securing same with a tie string at their neck. This way the smoker may smoke and most effectively use up all of the smoke possible without wasting it upon their fellow non-smoking passengers.

In a serious vein, however, as air travel becomes less convenient because of conjected terminals and nightmarich delays in flight schedules, it would seem that the least the Federal Aviation Administration could do to immediately improve the atmosphere in which airline passengers travel is to implement and enforce an absolute ban upon smoking of tebacco and any other substances on passenger planes. Aside from the convenience that would result, such a ban would elearly implement the federal policy to protect the health, confort and safety of millions of U.S. airline passengers.

I hope that you will give this expression of support for Mr. Mader's potition your thoughtful and vigorous consideration.

Sincerely yours,

Mayor M. Hancock Sentor Assembly

co: Im. Ralph Mador

Illis Robert L. Stone Typ7 Win Route Wista Palm Squings, California conto Thus Hips سنات المناء رسوما الموادر المارون المرون المارون المار if he Robert had in nour ugeting the good care Cincin to the precent (Some king) Lee Callers Education with your secret frances and Section of land line. Ent to ask you for epts contributions for will to serve it? I felt. inche Jay thank you + .com. · Acom Mary James

LOS ANGELLIS - Children whose parents den't smoke eighrets are less likely to cough, catch cold or come down with the fin than children of parents who do smoke.

Donald Robertson, assistant professor of sociology at California State College at Long Beach, said he and Paul Cameron, a psychologist at Wayne S'ate University in Detroit, had questioned 2,100 families in Detroit and 2,100 families in the Los Angeles area.

Defroit children from homes where parents smoked had 30 per cent more respiratory illnesses than nonsmokers' children. Smokers' children in Los Angeles and Long Beach had 20 per cent more respiratory ilinesses than nonsmokers' children.

Robertson said in an interview that the smaller difference between smokers' and nen-

"The study was made in November, 1923, when southern California children were able to be outside more of the time," he said.

"Even so, the difference in the Los Angeles area was substantial, and suggests that a smokey atmosphere in the home is a health hazard even here," Dr. Robertson said.

In addition to smoking, Robertson investigated whether air pollution affects the incidence of respiratory illinesses.

Of the 700 families questioned in suburban Pasadena and 1,400 in Long Beach, there was a 12 to 8% per cent ratio, respectively.

Pasacena, in western San Gabriel Valley, is in an area air polintion control district statistics show to be one of the smegglest. Long Beach is one of the least smoggy.

Smokers Under Pire

Polluting Air for Nonsmokers, Chemist Charges

WASHINGTON (AP) — A noted physical chemist said restorday eigerette smokers not only endanger their own health but when puffing in poorly ventilated rooms create an air-pollution hazard for nonsmokers.

Dr. Phillip H. Abelson of the Carnegie Institution of Washington advanced this opinion in an ecitorial in Science magazine of which he is control

Abelson, internationally known as one of the codiscovers of the element neptunium and for other nuclear-science contributions, said eigarette smeke poninins enrben monozide, nitrogen Gioxide, hydrogen cyanide and other chemicals which he declared ean contribute to air pollution in general. And he said these gases can reach cangerous levels in poorly ventilated, smeke-filled rooms.

"MOST PROPER, when they consider air pollution, faith of the cutemobile, the smokestock, or the trash burner. Few point to a

most dangerous sources of air pollution, the cigarette," he wrote.

The tobacco industry consistently has challenged all allegations of a health hazard from eigerette smoking. The industry contends no scientific proof has established any cause and effect link between smoking and cancer or other diseases.

Referring to carnon monoxide, Dr. Abelson soid:

"Concentrations of carbon_mangaids as high as 100 parts per million often occur in garages, in junnals and behind automobiles.

"Such concentrations are tiny in comparison with those - \$2.679 parts per million found in cigarette smoke.

"The smoker survives because most of the time he breathes air not so heavily polluted. However, in a poorly venilities. smoke-filled room, concentrations of corbon menexide can easily reach several hundred parts per million, thus exposing sauchers and consmolous present to a toxic hazard."

on husband's pulling

By DR. P. J. STEINCROHN

Dear Dr. Steinerehn: I we know when The Chief (my husband) gets home even before he gets by the doer. I smell his eighrettes. When he passes me I get one whiffset his eighrette smeke and my throat burns like a radiation burn.

Not too long ago I noticed that when I sit in the living room, the smell is strong from the curtains. I have to wash them every week in order to get the smell out. Otherwise I have to go around the house with a mask.

The trouble is that he is a chain smoker and doesn't believe how the smoke affects me. And how the dead butts in the ash trays kill me! I know they can't outlaw all smoking, but what are those of us who are so sensitive to smoke to co?

I have a number of nonsmoking friends who feel the same way. When exposed to smoke we get dizzy, eyes become inflamed and our stemachs feel as if we've been given a blickey Finn. Meanwhile we will have to slowly die while the smokers go on puffing.

All I hear is how deadly eigarettes are for smokers. How about us? The innocent enes? Wherever we go, we have to fight the effects of eigarette and eigar smoke. Is there no end? What can we do?—Mrs. D.

I doubt that you can do anything about it in public places. You are at the mercy of smokers who feel it is their right to smoke, regardless of the feelings of others. It's not against the law. But bein gexposed to smoke unnecessarily in the home is another matter entirely. I hope The Chief sees today's column.

The lease yer can do is take your smekes outside the house. I know many eight smekers who take their after-dinner smoke entside so their wives went suffer the smoke inside. If your wife is so unhappy and so sonsilive, the least you can do is be an inside non-smaker.

RIDERS SMOKE LESS

CHICAGO (AP) — A survey by the Burlington Railroad shows its commuters are smoking less and want to be isolated from fellow passengers who haven't kicked the habit, the realroad announced.

Smokers formd Armyed: Dy Second-Hend Emoks

EVANSVILLE, Ind., Dec. 27 (AP)—A study at the University of Evansville shows that even smokers do not the their tobacco finnes at second hand.

A team headed by Dr. Paul Cameron made 729 telephone calls at rendem in this area and asked people how they felt about other persons' tobacco smalte at close quarters.

Twenty-six per cent said the femes were encoying, 17 per cent colled it "very ennoying" and 11 per cent said the femes were "the most encoying thing I generally concounter around other pao-

Even among smokers, 18 per cent reported other persons' tohacco smoke was annoying.

ED% of Commuters Found | To Like Wo Smeking' Cars

the Euriliagion railifold shows its commuters are smoking less and want to be isolated from felicity poster para tulo have not kildred, the habit, the railifold has appeared.

fellow poster gers who have not licked the habit, the railroad has taneomera.

A spokessam for the Chicago, Durlington & Galacy Reilroad Company, said the survey indicated 89 per cent of its commuter passengers preferred to ride in nonsmolving cars so smoking would be permitted in fewer cars during rush hour.

More than 8,000 of the route's 20,000 commuters responded to questionneits the spokesmen, said.

sorest of the social care, eyes and even lightness of pet business in pollution, breath for millions of in-had humon to not got that meent fellow citizens just to the first force of the social size to had human hazarda, bod heeth, fire hazarda, bod aheet hazarda enother to and to the list: ace to the list.

Everybady hooked on to- man, Memphis, Tenna, in Allergies.

eyes and even tightness of the CLA) which and Saturday necent fellow citizens just, at the Hotel Collegiona Molooking for clean air to breath, scientific progress

has divulged. The word came Friday from Dr. Bernard M. Zuss-

To all more of annual burden of causing in of the American Association of the American Chainande Chand Immu-

tor Inn.
Dr. Zusernan cited facts to back up this latest indictaient, which may come to be reviled by smokers. more than The Surgeon General's Reportation of

A conservative estimate is that 8 million Americans are dealt allergy miseries thy the cloud of cigarette smoke around them, Dr. Zussman said.

And, to his Impwiedge. none of them micke. That is why they are innocent

victims. Zussman, yato kas a private practice and is an instructor in the University of Tennessee's Cepartment of medicine, said this latess Hateful aspect of the cigractic came to light only recently.

of found many of my patients were complaining When they were exposed to tobacco smoke,". ne said. They were having hay fever symtoms — tearing of the eye, rechess and tightiners of the chost."

redepations in such Caseer has caplained, become "sensitized" to tobacco smoke, mainly becouse they've been around it to much. And, too, because they're allergy proge - only people that aiready have allergies develop this tobacco seasitive ity, ha said. ...

tion, according to his ligatures. There are 50 million people in this country with allergies, and 15 per cent of them become sinoke sensitive — hence the 8 million tobacco sufferers. The problem is becoming more and more sens there are more and more people will allergy problems and more people are smaling.

"These are innecest vietims of society," Dr. Zussemen said, enough to cause a bit of redness of the eye even without a eiganette burning.

first magnitude," the professor insisted, adding the poor victim can't do anything for himself. "The allergist can do comething." though," he said.

What the allergist can

What the allergist can do; Dr. Zussman can plained, is logically called a treatment to "Ge-sensitive" the victim.

The exact nature of his sensitivity is pinpointed through tests, and he's given tobacco extracts. "It's the principle of building up i m m u n i t y," the doctor said.

the victim to avoid tobacco smoke completely. "But that's impossible in our society. I've found," he said.

Victims — and emchers — will be thended to learn Dr. Zussman said the desensitization process relieves patients of any discomfort at all connected with tobacco smalls.

doesn't smoke — enymore. He did until 15 years age, moderately he said, and then sinus trouble forced him to give it up. He doesn't have any allergies, either, he said.

As you might emplet. Dr. Zussman Geesn't allow envene to smoke in his office.

in Manth even let my mirses smalle. We have a "No Smoking" sign, and everyone's happy."

Medical Society Urges More Smoking Bans

By TRAOTHY HUTCHENS Star Stall Writer

day called for a ban on eigarette persons who want to stop smoksmoking in public schools, an ing. end to eigerette seles in hospital Physicians and ministers will tals and separate hospital conduct the clinics Monday facilities for patients sensitive to through Friday from 11:30 a.m. eigerette smoke who find themselves in semi-private rooms nauties and Space Administrawith smokers.

advance of a massive anti-ventist Church, 3935 Massachuspioking campaign in the Dissetts Ave. SE.

trict next week

government stop using tax dollars to promote the U.S. tebacco industry and that the Federal Fer physicians and other liners,

their neighbors to stop polluting 2007 I St. XXV.

themselves with tobacco smoke.

The D.C. Interagency Council A special workshop for teenageil on Smoking, with representatives from 60 public and private 1:30 a.m. to 2:30 p.m. Jan. 17 m tives from 60 public and private 1:30 a.m. to 2:30 p.m. Jan. 17 m the Departmental Auditorium, agencies and organizations, has planaed a massive "No Smoking planaed a massive "No Smoking nue NW.

O A merch Sunday between This week, hundreds of Boy 3:30 and 5 p.m. that will start at Scouts and Pathfinders, mem-7th Street and Adams Drive on bers of a Seventh-Day Adventthe Mall and preceed to the Syl-list youth organization, have van Theater at the Washington been distributing cards adver-Monument for an anti-smoking tising an anti-smaking telephone ; pregram.

• A luncheon at the Mayflow- programs are also planned. radio and television.

o Four five-day withdrawal clinies, sponsored by the Sov-The D.C. Mcdieal Society to-Ionth-Day Adventist Church, for

tion, 400 Maryland Ave. SW: and Dr. Frank S. Pellegrini, presi-from 7:30 to 9 p.m. at Walter deat of the 1,800-member socie-Reed Army Medical Center and ty, announced the positions injet Dupont Park Seventh-Day Ad-

The fourth clinic will be Sun-The society also asked that day through Thursday, 7:39 to 9 physicians had "No Smoking" p.m., at First Seventh-Day Adsigns in their effices, that the ventist, 2:0 Shepherd St. NW.

Workshop Planned

Aviation Administration and health professionals, Dr. Don-Congress approve patitions and ald Fredrickson, former directilis for either separate smoking tor of New York City smokinging compartments or smoking withdrawal claims, will conduct bans abound commercial air- a workshop on "Ilm to Help liners" Your Patient Stop Smelting." Next week, hundreds of partie- It has been scheduled for 7:30 ipants in Washington plen to try p.m. Wednesday in the D.C. to persuade tens of thousands of Medical Society's auditorium at

This week, hundreds of Boy

message service. Many school is

er Hotel at reon Tuesay to henor. Starting Jan. 16 a five-week Sen. Frank Mess. D-Utah, as series on "How to Step Smok-"Man of the Year" for his effects ing" will be shown at 7 p.rn. on to ban eigarette commercials on successive. Friday nights on it WETA-TV (Channel 28).

EXHIBIT G



HAMEDS HOUSELD TABLES IN A SECOND

AIRCRAFT ACCIDENT REPORT

ADOPTED: June 2, 1966

RELEASED: June 9, 1966

UNITED AIR LINES, INC.
VICKERS VISCOUNT 745D, N7405
NEAR PARROTTSVILLE, TENNESSEE
JULY 9, 1964

SYMOPSIS

A United Air Lines, Inc., Vickers Viscount 745D, N7405, Flight 823, crashed 2-1/4 miles northeast of Parrottsville, Tennessee, at 1815 e.s.t., July 9, 1964. Thirty-four passengers and the four cremmenbers died in the crash. One passenger died of injuries following a free fall from the aircraft before the crash. The aircraft was destroyed by fire and impact damage.

Flight 823 was a regularly scheduled operation from Philadelphia, Pennsylvania, to Huntsville, Alabama, with en route stops at Washington, D. C., and Knoxville, Tennessee. The flight operated without any reported discrepancies or difficulties until approximately 1810 e.s.t., when it was observed flying at low altitude trailing smoke. The flight continued in a southwasterly direction and at a point approximately 1.6 nautical miles before the impact site, a passenger was seen falling from the aircraft, and a short time later a cabin window was seen falling. The aircraft was then observed going into a nose-high attitude, the left wing and the nose went down, and the aircraft dived into the ground, exploded, and burned.

The Board determines that the probable cause of this accident was an uncontrollable inflight fire of undetermined origin, in the fuselage, which resulted in a loss of control of the aircraft.

1. INVESTIGATION

1.1 History of Flight

The aircraft, N7005, operated as United Air Lines (UAL) Flight 609 from Raleigh-Durham, North Carolina, to Philadelphia with intermediate steps at Washington, D. C., Buffalo and Elmira, New York, and Hilliamsport, Pennsylvania. The aircraft departed Raleigh-Durham at 07051/2 and arrived at Philadelphia at 1245. The captain and senior stewardess of the flight from Buffalo to Fhiladelphia stated that the flight was routine and the aircraft operated normally.

^{1/} All times herein are eastern standard time based on the 2h-hour clock.

Despite impact and fire damage, some information was obtained from the Mavigation and communications equipment. The two VHF radio transmitter selector switches were positioned on "No. 1 VHF Com." The No. 1 VOR navigation receiver was tuned to the Knoxville VORTAC. The No. 2 VOR receiver could not be identified. The owni bearing indicators read 055 and 116 degrees. The cockpit control head of the Air Traffic Control (ATC) radar beacon transponder was recovered positioned on Channel 11, Mode B; however, the Atlanta ARTCC radar had been receiving Channel 11, Mode A. Of the two automatic direction finding loop antennas, only one provided bearing information, 0% degrees. The distance measuring equipment (DEE) as recovered was tuned to the Knoxville VORTAC with the mileage module locked at 47.5 miles. One altimeter was recovered, set at 29.32.

1.13 Fire

· Both inflight and post impact fire occurred in this accident. The extent of the post impact fire as well as the extensive break-up hampered the investigation with respect to origin and progress of the fire. However, a comprehensive mock-up did permit some determinations in these regards.

Ground witnesses established by observations of smoke that there was an inflight fire. Burns and soot deposits on the free-fall victim and fire damage to bits of · cabin material that fell away from the post impact fire area located inflight fire in the passenger cabin of the aircraft.

Exemination of the wings, empennage, and powerplants did not reveal any evidence of inflight fire.

The fuselage beneath the cabin floor and rearward of the main spar (FS-hlh) contains the fuel burning Janitrol heater and is also the section through which the engine fuel system cross-feed line passes. The fuel line runs within a shroud which is vented to the outside. In the event of a double leak involving both the fuel · line and shroud, fuel would not be released into the fuselage during pressurised flight. The janitrol heater is not used in flight. There was no evidence of inflight fire in this area. This is the only portion of the fuselage that has engine fuel carrying lines.

Beneath the cabin floor, from FS 335 forward encompasses the cargo compartment · and spaces containing some electrical equipment, including the inverters. Sufficient unburned cargo and airplane material was recovered from this area to eliminate the 'possibility of inflight fire in this portion of the fuselage. Likewise, the invert-* ers did not reveal any signs of operational over-temperature. The investigation , included a check of the cargo and stowed personal luggage for hazardous materials with all indications being that none were aboard.

The remaining portion of the fuselage beneath the cabin floor between FS 335 and FS hill is known as the electrical bay. The generator and starter circuits are brought into the fusclase by means of feed-through study through the fusclase skin at each side of this compartment. Through stud detail design provides specific safeguards to preclude conductor to ground faults. Circuits from these study run to main distribution panels mounted on the forward face of the main spar. Also " within this compartment are most of the electrical system control and smitching relays utilized in the electrical supply system, the batteries, and a freen compressor. Hydraulic lines, some of which was be presdurines, depending on system demand,

also run through this compartment. A degree of isolation of the hydraulic lines from the electrical components was attained in the design by physical separation and barriers. Fire damage in the electrical bay area was extensive, particularly on the left side. The majority of the components were destroyed or not recovered. Examination of the recovered electrical components did not reveal any evidence of a heat generating fault. One battery terminal did show an are produced mark. No evidence of a hydraulic line look was found. There was no consistent pattern of inflight fire discernible in this area. Smoke patterns on the main spar cap as well as scot and discoloration patterns on seat track pieces that were installed between FS 335 and FS lith were given detailed attention. Clean fracture and scrape marks next to sooted or discolored areas and discoloration of seat track pieces on the underside, which is exposed in the electric bay, contrasted with clean upper surfaces which are in the passenger cabin but not exposed.

An inflight fire existed in the passenger-occupied portion of the cabin. The only flamable liquid carried as a part of the airplane above the fuselage floor is hydraulic fluid in a reservoir located in a compartment between the carry-on luggage rack and the lavatory. The reservoir was damaged by impact and fire and was empty. The fire damage pattern in and about the reservoir compartment did not support hydraulic fluid as a contributing factor to the fire. Another source of flamable fluid known to have been abound the aircraft was a one-gallon can containing a conmercial paint modifier. This can was recovered in the wreckage area, crushed with no evidence of fire damage to either the can or its paper wrapping.

Fire damage and smoke patterns were found in three general areas of the passenger cabin. These were (1) Beneath No. h window on the left side from approximately FS 388 to F3 k95; (2) On the cabin side of the forward bulkhead, FS 193, on its left side; (3) On the exterior wall of the forward lavatory, right side at F3 232. There were other isolated areas of fire or soot damage throughout the cabin including the lower half of the No. 9 window, on several public address system speakers, and on some passenger seats.

Under the No. I window there was heavy sooting of the shear cleats of the stringer which were tightly compressed against the fuschage skin during breakup. Clean (unsooted) breaks were noted in the sooted areas under the window as well as clean areas where flush rivets had been pulled from the structure.

damage. The vinyl material that covers the top half was missing but the backing material was not damaged while the bottom half was heavily matted with a deep soot pattern. Another piece of decorative wall material was heavily sooted and matted but the splintered edges of the plymood backing were comparatively clean. The front wall attachment bracket for the blanket rack was moderately sooted but was clean under the rotated reinforcement plate. Most of the fuselage former sections from PS 399 aft to FS 618 displayed distinct unsooted areas that were covered by blanket rack support brackets before breakup. A portion of a soundproof window.

^{9/} The soundprecing window is a second piece of plexigless mounted inbeard of the regular window covering the entire window opening. These soundproof windows are located at the Nos. 1 and 2 window positions and can be identified by their lack of contour and the special plastic used in them.

recovered coated on the inside with soot and a white deposit which was similar to the white snoke given off when the viral cover on the left forward bulkhead is burned. The plastic window material had flow marks on it which indicated that it had been heated to approximately 626°F., while in an upright position. There was also evidence of pre-impact fire in the carry-on baggage rack and other areas in the forward cabin.

The firefighting equipment abound the aircraft was examined to see if it had been used. Fire extinguishing systems are provided for the engines, underfloor cargo compartments, the Janitrol heater, and the cockpit and cabin. Three of the four engine fire bottle discharge heads were recovered but none should signs of having been discharged by electrical means. The former cargo compartment M2 extinguisher had been fired electrically. He positive determination could be made as to whether the Janifired electrically. He positive determination could be made as to whether the Janifired electrically. He positive determination could be made as to whether the Janifired electrically. He positive determination could be made as to whether the Janifired electrically. He positive determination could be made as to whether the Janifired electrically. He positive determination could be made as to whether the Janifired electrically, he positive determination could be made as to whether the Janifired electrically, he positive determination could be made as to whether the Janifired electrically, he positive determination could be made as to whether the Janifired electrically, he positive determination could be made as to whether the Janifired electrically, he positive determination could be made as to whether the Janifired electrically, he positive determination could be made as to whether the Janifired electrically, he positive determination could be made as to whether the Janifired electrically, he positive determination could be made as to whether the Janifired electrically, he positive determination could be made as to whether the Janifired electrically, he positive determination could be made as to whether the Janifired electrically, he positive determination could be made as to whether the Janifired electrically, he positive determination could be made as to whether the Janifired electrically had been determination could be made as to whether the Janifired electrically had been determination could be made as to whether the Jan

A flight crew walk-pround organ bottle was recovered with the control valve open. The rubber disphrage in the regulator had been discolored by smoke. One passenger expend bottle was found that the shuboff valve "open." A portion of one of the three installed flight crew full-face smoke masks was recovered but there was no evidence of its having been in use.

All three supercharger spill value actuators were found with their actuating rods in the "supercharge spill" position. This setting would dump supercharger air overboard rather than using it to pressurize the cabin. The cabin pressure control located in the cockpit was set at the "sea level" selection and the cabin outflow valves were found in the manually depressurized position. The unpressurized flight valve electrical actuator was found in the "depressurized" position.

The interior locking mechanisms for the No. h and No. 9 mindows on the left side were found in the unlocked position, and the captain's direct vision (DV) window sad frame with was found unlocked and partially open. The copilet's DV window track and frame with attached cockpit liner should evidence of heating and sorting. Adjacent portions of the cockpit liner that had been covered before breakup were clean. The window position at impact could not be determined. There was no evidence of an inflight fire originating in the cockpit portion of the fuselage.

The engines, underfloor campa compartments, and the Jamitrol heater are equipped with fire detection systems. The captain of the previous flight in this aircraft testified that he detected no problems with the fire warning systems when he tested them.

There is no smoke detection system other than crew sense of smell or observation of smoke in the aircraft.

In normal operation cabin air is drawn down under the cabin floor and circulated back into the cabin by the recirculating for through ventilators in the cockpit
and cabin. Any smoke generated under the cabin floor would be transferred to the
cabin and cockpit within seconds there it would be seen or smalled by the crew and
passengers.

1.14 Survival Aspects

This accident was non-survivable and no studies were made of the structure from that standpoint.

1.15 Tests and Research

The passenger that fell from the aircraft exited through an emergency window over the left wing. Witnesses who saw him fall said he did not strike the empenhage but fell nearly straight down. An aerodynamic study as well as the body injury pattern confirmed the witness observations. He died of injuries received on impact with the ground. He had received burns on the hands, face and neck before death but had only a few carbon payticles in his trachea and a carbon monoxide level of five percent in his blood. The upper portions of his clothes were impregnated with scot. There was no evidence of ground fire where the body was recovered.

The Armed Forces Institute of Pathology (AFIP) performed a number of tests of specimens from both cremmenbers and passengers for the Board. Tests for carbon monoxide were not done on the flight crew due to a lack of suitable specimens. Passenger toxicological examination results were negative; no elevated carbon monoxide levels were found; no significant amount of alcohol was found; and tests for methylbromide yielded negative results. Histological examination of the seven recovered respiratory tract specimens revealed only a small number of carbon particles in each.

Pederal Bureau of Investigation laboratory tests were accomplished to verify evidence of heat and smoke deposits; analyze various deposits on aircraft parts and on the free-fall victim's clothing, and evaluate possible evidence of sabotage. No residues were found to indicate that an explosion occurred aboard the aircraft. The reports did describe evidence of considerable heat or fire damage and sooting to various components within the cabin, cockpit, and under the cabin floor aft of the cargo pit and forward of the main spar.

With the Board's concurrence, Pritish Aircraft Corporation laboratory tests

were conducted on samples of aircraft structure, components, and the free-fall
victim's clothing. These examinations consisted of exposure of ultra-violet light,
X-ray, infra-red and emission spectroscopy, microscopic and visual observation.

Their test results indicated that there was evidence of cabin fire on seats, windows,
forward bulkhead trim, and the carry-on luggage rack. The sidewalls of the carry-on
luggage rack had been exposed to temperatures on the order of 122°F., and the plastic material from a soundproof window had been exposed to temperatures of 626°F.

They were best able to duplicate the heat damage to the free-fall victim's clothes
by burning and quenching a fire of lighter fluid in a sample of the material. They
did note the presence of black deposits on the bottom of seat track samples, taken

from an area over the electrical bay, with none on the top of the samples. They
concluded, however, that the deposits had more the characteristics of lacquer than
soot.

^{10/} Any concentration of less than 10 percent cerbon monoxide is considered negative.

The National Bureau of Standards prepared a number of electron photomicrographs of carbon specimens taken from the free-fall window and passenger's clothing, and from various components of the aircraft found at the main wrockage site, primarily from under the cabin floor between FS 317 and FS hill. They conducted tests to determine the effects of various temperatures on paint on pieces of seat track and underfloor runners taken from the aircraft wrockage. They also examined the Janitrol fire extinguisher bottle firing strip. Aluminum paint samples exposed to heat of less than h00°F. for two minutes showed no visible effects. Color changes began after exposure for two minutes at h00°F, and blistering began in two minutes at h50°F. At 900°F, the paint darkened to dark brown or black. These results were used in conjunction with the electron photomicrographs to study various components of the aircraft for evidence of fire in flight. The examination of the Janitrol bottle firing strip was inconclusive and no determinations could be made regarding the conditions under which it fractured.

The photomicrographs of the carbon specimens were forwarded to a specialist in an effort to determine the identification of the material that produced the soot found on the wreckage and the free-fall victim's clothing. The carbon deposits taken from both the free-fall items and under floor wreckage at the crash site were identified as being the produce of incomplete combustion of saturated alighatic hydrocarbons. Examples of this type of fuel are kerosene, gasoline, paraffin, hydraulic fluid, lighter fluid, and naphtha. Of these examples, only kerosene, hydraulic fluid, and lighter fluid were known to be aboard the aircraft. The lighter fluid was not known to be aboard in sufficient quantity to produce the amount of fire experienced. Kerosene in the form of engine fuel and hydraulic fluid were aboard the aircraft in quantity.

Additional studies of the fire damage were made by a specialist from the Massachusetts Institute of Technology and tests to determine the effect of heat on aluminum surfaces were made under his direction. These tests, made under laboratory conditions, included the exposure of numerous painted and unpainted specimens to open flames in one series and to oven heating in another series. In the open flame tests, kerosene, hydraulic fluid and turbine engine oil were used with both oxidizing and reducing atmospheres to produce soot deposits on the test specimens. In these tests it was found that soot was deposited only on those portions of specimens in the line of flame impingement. Scratches in areas of light sorting remained clean and bright, but became dark with progressively heavier deposits of scot. The soot build-up in scratches and cuts was also a function of flame impingement angle. In another series of tests, individual specimens were dipped in one of the above-mentioned fluids prior to insertion in the oven. They were retained in the oven for five minutes at temperatures ranging from 450°F., to -1000°F. Both oxidizing and reducing atmospheres were used. In these tests painted aluminum surfaces darkened progressively to 200°F. Above this temperature the dark coloring disappeared and the surfaces became silver gray. Fetween 7000 and 5000 the fluid deposits burned, leaving black deposits on all surfaces. At lower temperatures scratches and edge cuts on specimens remained bright, independent of the surface discoloration caused by the fluids and other deposits on surface finishes on the specimens. From these tests and comparison with the underfloor wreckage of 17105, he concluded that there was no positive evidence of an underficor fire prior to impact.

1.16 Additional Information

Investigation of insurance purchased by passengers and cremmembers disclosed no suspect areas. Nothing unusual was noted regarding the passengers or baggage that went aboard the aircraft and there was no known hazardous cargo aboard the aircraft.

2. ANALYSIS AND CONCLUSIONS

2.1 Analysis

Crew training and cartification were not considered to have a causal relation—ship to this accident. The weight and c.g. of the aircraft was within limits at takeoff and computed to have stayed within limits until the crash. There was no evidence that the weather, sabotage by explosion, any failure of the powerplants, or the primary aircraft structure played a part in this accident. The Air Traffic Control handling of the aircraft was routine throughout the flight. There is no evidence of improper aircraft maintenance or that the aircraft was not airworthy at the time of its departure from Washington.

There was no indication of any difficulties aboard the aircraft until after it passed Holston Mountain VOR. Having passed the VOR, the crew began a normal en route descent in VFR conditions that would have brought them into the Mnoxville area at a reasonable altitude to maneuver for a landing. Their descent was probably normal, i.e., approximately 1,000 feet per minute until they canceled their IFR flight plan at 1802:45. There was nothing in their transmissions to indicate they were having any difficulty at that time. The aircraft should have been at approximately 11,000 feet and about 24 miles southwest of Holston Mountain when they canceled their IFR flight plan.

At some time during the descent, the aircraft deviated to the south of V1.6 but was proceeding approximately parallel to the airway. No reason can be assigned to this deviation. The first witness believed to have seen the aircraft was 38 nautical miles southwest of Holston Mountain. He estimated the aircraft to be 1,000 feet (approximately 5,500-6,000 feet m.s.l.) above the terrain and the aircraft appeared to be normal at this time. The aircraft appeared to be following a nearby river, in a descent, and was about S miles south of the airway centerline. Three miles farther along the flightpath, at approximately 1810, the aircraft was observed about 500 feet above the ground. The aircraft continued to operate at very low altitudes and well to the left of the airway from this point on to the crash. The average rate of descent from imitiation to level off at an estimated 500 feet above the ground was about 1,200 ft./min. and the average ground speed was 17h knots from initiation of the descent to impact. This indicated that the flight's airspeed was reduced from a cruising speed of 237 knots to some lower value and that the descent was continued to an altitude above the ground lower than that normally utilized in transport operation.

It is believed that the crew discovered a fire sometime during the period between cancelling their TrR and before being observed in a descent about 1,000 feet above the ground.

As previously stated there was extensive fire damage in the electrical bay. However, this fact alone cannot be considered significant. This area in the

Viscount, as in the majority of low wing configured aircraft, is in close proximity to and botween the fuel tanks. Thus, in a breakup, this is a likely area to receive a substantial quantity of the spilled fuel and in turn to be heavily damaged by post impact fire. This fire damage pattern has been observed in many accidents where post impact fire occurred. The somewhat conflicting scot and discoloration patterns observed on certain isolated pieces from the cleatric bay area dictated further considerations with respect to inflight fire. The only likely source of overtemperature in this compartment is a gross electrical fault to ground. The emergency procedure executed by the crew does not support a gross electrical system malfunction. An electrical source snoke or fire emergency is combated by turning the emergency power switch on and placing the battery master switch and generators off. Equipment that was operating at impact and DAE operation to five miles before impact shows this particular emergency procedure had not been executed. Historically, under-the-floor fires that have persisted to a catastrophic stage have burned through the relatively light fuselage belly skin, have been observed by mitnesses when present, and have left a path of partially burned debris on the ground. This did not happen in this case. Finally, to involve the hydraulic fluid in an electric bay fire would have required two essentially simultaneous failures, fluid leakage and an electrically induced overtemperature or sparking situation for ignition. Physical evidence fails to support either of these occurrences. Although the object of a great amount of investigative effort, the origin of the fuselage fire being in the electrical bay could not be established on the basis of the available evidence.

Burns on the free-full victim and fire-damaged passenger cabin saberial found remotely from the primary impact and ground fire area established conclusively that there was an inflight fire in the passenger cabin. Evidence of use of the portable cabin CO2 entinguisher and the attempt to use the portable tater extinguisher, together with the open valve of a flight crew walk-around oxygen extinguisher, together with the open valve of a flight crew walk-around oxygen bottle are suggestive of the first officer baving gone back to the cabin to fight the fire a few minutes before the crash. Opening the outflow valves, the left side cockpit window, and emergency exits was probably done in connection with smake evacuation efforts.

Spill valves to "spill" and discharge of CO2 into the baggage compartment are procedural items to combat a cargo compartment fire and were accomplished. It is recognized that accomplishment of these two items is not compatible with the conclusion that an inflight fire did not originate beneath the cabin floor. Any attempted explanation must of necessity be conjecture. However, it is considered likely that as the situation aboard the aircraft became very grove, pracise sidered likely that as the situation aboard that offered even a remote possichecklist items were supplemented by any action that offered even a remote possibility of being helpful.

The combustible material and source of ignition that started the fire are not known. Although attempts to determine if any passenger had carried and hazardous material aboard the aircraft did not reveal this had occurred, the possibility cannot be ruled out. Such a material, either innocently or with malicious intent may have been in the possession of a passenger. Leakers or soillage of a flammable fluid with accidental or intentional ignition is a respicte situation. Substantial sircraft cabin fires are such a rare occurrence what a musual and possibly not readily conceivable circumstance is visualized in this instance.

In examining the final maneuver and crash, it is apparent that the aircraft was not under control of the crew. There are a number of hypotheses that can be advanced to explain this loss of control including: distraction of the pilot; failure of the flight control rods due to fire damage; incapacitation of the pilot by heat and/or smoke; a shift of loading caused by the passengers moving to the aft end of the cabin; an overt act by some person aboard the aircraft; or any combination of these.

There is no probative evidence available to the Board on which to base a determination as to the cause of the final maneuver.

2.2 Conclusions

- A. Findings
- 1. The flight crew and stewardesses were properly qualified and certificated.
- 2. The weight and c.g. of the aircraft were within limits at takeoff from Washington, and on the basis of known facts, computed to be within limits at the time of the crash.
 - . 3. Weather was not considered to be a factor in the cause of this accident.
 - h. There was no powerplant or airframe failure prier to the accident.
 - 5. There were no known aircress errors.
 - 6. There was an inflight fire in the passenger cabin.
 - 7. Firefighting and smoke evacuation procedures were carried out by the crew.
- 8. The free-fall victim was exposed to high heat and heavy soot before he left the aircraft through the Mo. h window. He did not strike the tail, but received fatal injuries due to impact with the trees and ground.
- 9. Sooting by inflight fire was caused by incomplete combustion of an aliphatic hydrocarbon fuel.
- 10. The Board is unable to identify the source of fuel, the ignition point of the fire, or the cause of the final maneuver.

B. Probable Cause

The Poard determines that the probable cause of this accident was an uncontrollable inflight fire of undetermined origin, in the fuselage, which resulted in a loss of control of the aircraft.

3. RECOMMENDATIONS

Copies of recommendations with the corrective action taken are attached. Attachment No. 1 deals with the installed flight recorder and Attachment No. 2 the forward cargo compartment fire extinguisher.

BY THE CIVIL AEROMAUTICS BOARD:

/s/	CHARLES S. MURPHY	
•	Chairman	
1-1		
/S/	ROBERT T. MURPHY	
	Vice Chairman	
/s/	G. JOSEPH MINETTI	
• •	Member .	_
1-1	7.77-27-27-27-27-27-27-27-27-27-27-27-27-2	
/5/	WHITHEY GILLILLAND	
	Member	_
•		
/s/	JOHN G. ADAMS	
, -,	TOTAL OF PERMITO	_
	Hember	

EXHIBIT H

S.A. 380 - Hearings of Civil Aeronautics Board On Probable Cause of United Airlines Crash, Vickers Viscount 745 near Parrottsville, Tennessee, July 9, 1964:

Excerpts from examination of George R. Baker, Investigator in Charge, by Mr. McErlean, United Airlines, January, 1965:

- P. 28 No evidence of leakage of jet fuel in flight.
- P. 29 No hydraulic fluid leakage.
- P. 33 It is common for passenger air vents to have a collection of material on them caused by nicotine in the circulated air.

* * *

Excerpts of examination of B.G. Aston, flight safety investigator for British Aircraft Corporation by Mr. Montgomery, Vickers, January, 1965.

P. 726 - From flight safety Foundation bulletin, August, 1964:

"Cigarette lighter caution. Quite recently, Flight Safety Foundation was advised that one of the overseas airlines requires its cabin attendants to caution passengers against use in flight of a certain brand of plastic cigarette lighter. This particular type of lighter was a plastic reservoir containing visible lighter fluid. To use the lighter, the owner turns it upside down and presses a button, which releases fluid from the reservoir to wet the wick. It is then turned upright, and a wheel turned to generate the spark to ignite the wick. It appears that if the internal pressure in the lighter is greater than the outside, for more fluid is released than the user is accustomed to under normal conditions of no pressure differentiation; the result is a big wall of flame which, on two occasions, caused a fire in the cabin of an airliner."

P. 727 - Re: Fire in United Airlines Boeing 720 (reading):

"The flight arrived with a report of smoldering fire in the cabin and sidewall of seat 20-D and E. Investigation disclosed fire to have been caused by smoldering eigarettes on carpet next to the plastic cabin exhaust grill. It appeared to have then ignited the exhaust grill and spread behind the sidewall. The carpet map in an area the size of a man's hand had been burnt beside the plastic cabin air exhaust grill. There was no evidence of open flame, but smoldering flame had been fairly intense in the exhaust grill. The resin impregnated fiberglass grille had burnt in two. Heavy deposits of smoke accumulated on the floor Decays beneath the seat row 20. Insulation had protected the structure from over-heat." Exh. 27-A.

UAL Memorandum to CAB Submitted 3/1/66:

P. 3 - "The passenger who jumped from the aircraft prior to the crash had suffered flesh burns on his face and hands. In addition, the clothing worn on the upper part of his body had become impregnated with deposits of soot."

EXHIBIT 1

AIRCRAFT ACCIDENT REPORT

Adopted: September 5, 1968

PIEDMONT AVIATION, INC.PIEDMONT AIRLINES DIVISION
BOBING 727, NGC650

LANSEAIR INC., CESSNA 310, N31215 MIDAIR COLLISION

HENDERSONVILLE, NORTH CAROLINA
JULY 19, 1967

NATIONAL TRANSPORTATION SAFETY BOARD
DEPARTMENT OF TRANSPORTATION
WASHINGTON D.C. 20591

For sale by Clearinghouse for Federal Scientific and Technical Information, U.S. Pepartment of Commerce, Springfield, Va. 22151. Annual subscription price \$12.00 Domestic: \$15.00 Foreign:

1.13 Fire

Heither aircraft exhibited evidence of any in-flight fire prior to collision. An extensive ground fire consumed most of the Boeing 727 fuschage following impact with the ground.

1.14 Survival Access

This was a nonsurvivable accident. All persons aboard the two sircraft died of traumatic injuries sustained in the accident.

A review of the medical records and post-mortem examination of all the involved pilots revealed no evidence of any pre-existing disease or impairment which would have compremised the safe operation of the aircraft.

1.15 Tests and Research

Cockpit Visibility Study

A cockpit visibility study was conducted by the Safety Board to determine the physical limitation of visibility from the flight crew seats in each aircraft involved, and to reconstruct the flightpath of each to determine if those physical limitations would hinder the crews in their detection and observation of the other airplane.

The data developed by the flight recorder readout were used to establish the flightpath of the Boeing 727. Since no detailed data comparable to that obtained for the Boeing 727 were available on the Cossna, the flightpath parameters chosen were based on the best available information. The scratch marks indicated that, at the moment of impact, the bearing of the Cossna from the Boeing 727 was 18°. In order to determine the heading of the Cossna at the time of impact, it was necessary to select two airspeeds considered to be the reasonable cruising

speed extremities. The two speeds were 140 knots and 200 knots. By method of vector diagrams it was determined that at an airspeed of 140 knots, the heading of the Cessna would have been 230° to impact, and at 200 knots, it would have been 240°. At any intermediate airspeed, the heading would vary within this envelope.

The altitude variation of the Cessna 510 was computed by determining the descent from 7,000 feet m.s.l. 8/ to 6,132 feet (collision altitude) within the known time parameters. It was found that the Cessna descended 808 feet in 2 minutes 32 seconds, or an average rate of descent of 5.3 feet per second.

The ground track for the Boeing 727 and the two ground track parameters for the Cessna were plotted. From these ground tracks, ranges and bearings between the two aircraft were obtained covering the last 35 seconds of flight. This time period was chosen as the maximum time that one aircraft would have been visible to the other, based on the speed of the two aircraft and a median in-flight visibility of approximately halls.

In order to determine the physical limitations of vision from each cockpit, binocular photographs were taken of a Cessna 310 and a Boeing 727 by the FAA's National Aviation Facilities Experimental Center. These photographs utilized a fixed seat and eye position which were obtained through investigation and design eye position.

^{8/} The altimeter of the Cessna was found at a barometric setting of 30.20 inches Hg. Since the Asheville barometric setting was 30.26 inches Hg., the aircraft would have been at 6,940 feet m.s.l. when its altimeter read 7,000 feet m.s.l.

From these studies, it was ascerbained that for the lest 35 seconds of flight, the bearing from the Boeing 727 to the Cessna varied from 37° to 18°, and from 39° to 18°, with a Cessna speed of 140 knots and 200 knots, respectively. The bearing from the Cessna to the Boeing 727 varied in a similar manner from 41° to 32° and from 30° to 22°.

The closure rate between the two aircraft at the Cessna speed of 140 knots varied from 528 feet/second at 35 seconds from impact to 590 feet/second at 1 second from impact. At 200 knots the closure rate varied from 638 feet/second at 35 seconds from impact to 700 feet/second at 1 second from impact.

Based on the visual angle (angle subtended by the viewed object) resulting from the size of the target, $\frac{9}{10}$ it was determined that the crew of the Boeing 727 would have to look directly at the Cessna in order to detect it when they were separated by 35 seconds. Had the vision from the Boeing 727 been completely unobstructed and had the crew been looking directly forward, the Cessna could be detected at 20° to the right or left

^{10/} Targets referred to are point sources. It should be noted that as aircraft converged the visual angles of the targets would increase.

The following table shows the visual angles presented from both aircraft at the time and speeds indicated:

C-310 Speed 200 200 140 140	Distance between A/C 22,250' 700' 18,450'	Seconds to Timest 35 1 35	Visual Angle of C-310 3' 1°42' 5' 2°1'	Visual Angle of 2-727 17' 8°51' 20'
2.10	750	7	5.1.	jj.jj,

^{2/} Lockheed Aircraft Corporation publication, "Collision Avoidance Visibility", IFE 790 L/STR #1004 (SST).

of the foven at a range of about 7,100 feet. At closing rates of 700 feet/second and 500 feet/second, the time from such detection to impact is 10.1 seconds and 12 seconds, respectively. The Bosing 727 target would be detectable from the Cessna, providing the pilot had an unobstructed view, from 35 seconds before the impact to the time of impact.

Each aircraft had cockpit window configurations resulting in some restrictions to vision of a point target source of the other aircraft.

From the normal eye positions of the Boeing 727 captain and copilot, the Cossna would be partially obscured by the windshield posts. The Boeing 727, as viewed from the Cessna pilot's normal position, would have been partially obscured by the windshield center post at an airspeed of 200 knots and completely visible in the copilot's window at a speed of 140 knots. From the Cessna's copilot position, the Boeing 727 would have been partially obscured at the higher speed and behind the post at the lower speed. As was stated previously, the paths of the target aircraft plotted on the windshields were based on fixed eye reference points. If the crewmembers shifted their head positions, these paths would have changed.

The study does not take into consideration any restrictions to visibility such as haze and cloud obstructions.

1.16 Pertinent Information

Crew Positions - The Cessna

In order to determine the aircraft seating position of the occupants of the Cessna, personnel at the Charlotte Airport who observed the crewmembers prior to departure were interviewed. The only person who actually

Piedment Memorandum, December 18, 1967. Submitted by T.H. Davis, President of Piedment Aviation, Inc. to National Transportation Safety Board:

"Remarks of Diedment crew numbers recorded on the cockpit voice recorder indicate that there may have been sucking in the cockpit prior to the accident. See Exhibit 12A. No conclusion can be drawn about whether such smoking, if any, occurred before or after takeoff. In any case, there is no regulation or requirement of the FAA or other pertinent authority which governs the flight evew of a conserval jet afroraft. Smoking is not a safety factor in an aircraft of this type, and there is no evidence to suggest that smoking contributed as a cause to this accident." P. 8.

*Testimony of Capt. Warren O. Tadlock, Director of Flight Operation, Piedmont, Air Lines, at NTSB Hearing, on Piedment policy allowing flight deck smoking (Hearing Transcript, 628):

"There is only one reference in the Manual to people smoking in the cockpit and this is 'shall not smoke in the cockpit if the cockpit door is open and where it would be visible to passengers,' and in all procedures the crew goes to the no smoking sign, generally. That is, they don't smoke when the passengers are not allowed to smoke. But this is not stated in the Manual; this is just general practice."

Excerpts from Transcript of Cockpit Voice Recorder:

1559:10	First Officer:	"guess that thing's just over there"
• ·		* * * *
+ :44	Tower Radio	
	Transmission:	"P. 22 [Piedmont Flight 22] climb unrestricted to the VOR report passing the VOR."
	,	
:49	Piedmont Radio Transmission:	"OK unrestricted to the VOR."
√ :51	Captain:	"I still den't see Paul."
** :55 **	First Officer:	"He'll be right on down there about five miles on down the highway there's a"
1600:01	Captain:	**Ah-OK**
:05	First Officer:	"He usually comes about what we call coming up the highway."
•		· · · · · · · · · · · · · · · · · · ·
1600:32	Captain:	"Would kinda like to see that thing."
1600:37	Flight Engineer:	"Somebody got an ashtray on fire."

		Captain:	"I do, I think."
	:42	First Officer	"You know it couldn't be me."
•	:50	Captain:	"Ashtray isn't on fire (that's it) it's the cigarette that's on fire."
	:54	Flight Engineer:	"I'm sorryI *** up again, didn't I?"
8	:58	Flight Engineer:	"Just for that I'll burn you damn steak."
•	1601:09	Captain:	"Twenty-one thousand we got unrestricted."
		First Officer:	"Yes sir"
	:13	Captain:	"Does he want us about out of six doesn't he?"
•	:16	First Officer:	"I 'spect he does, he didn't say thataway."
	:17	Piedmont Radio Transmission:	"and twenty-two is"
•	:18	?	"UGH" [This was the last human voice recorded.]

EXHIBIT J

This exhibit incorporates by reference the following medical studies concerning the effect of tobacco smoke on people with pre-existing medical conditions, copies of which are attached to a petition filed with the FAA on behalf of Action on Smoking and Health and John F. Bauzhof III dealing with this same subject:

- 1. National Health Survey, June, 1967
- 2. Caplin, The Allergic Asthmatic, 1968
- 3. Laryngoscope, August, 1968 issue, article by Dr. J. J. Ballinger
- 4. Zussman, Atopic Symptoms Caused by Tobacco Hypersensitivity,
 61 Southern Medical Journal 1175 (1968)
- 5. Speer, Tobacco and the Nonsmoker,
 16 Archives of Environmental Health 443 (1968)
- 6. F. K. Hausel, Clinical Allergy, (1953)
- 7. Vaugh & Black, Practice of Allergy (1954)
- 8. Sherman & Kessler, Allergy in Pediatric Practice, (1957)

This exhibit also includes an excerpt from the book The Pulse Test by Dr. Arthur Coca, M.D. and incorporates by reference Chapter eight of the book which chapter is entitled "Tobacco Poisoning".

Josh, M.D. Dr. Goes was Medical Director of Loderic Laboratories, Monarary casident of the Imprican Assn of Immnologists, Scunder and editor of the owner of the owner of Immnologists of Pennsylvania, at the owner of Immnology; he taught at Cornell, University of Pennsylvania, at the spit Graduate School of Medicine at Columbia University. About 1936 he discovered, y accident, the close relation between the pulse and allergies.

rom Chapter eight, "Tobacco Poisoning":

The habithal smoker offends many a non-smoker. The objection is reflected in The Smoking signs in some public places. But recent scientific study has revealed not smoken indictment of the American weed. Tobacco turns out to be a overful allergen affecting more than three fourths of the population."

The allergic symptoms caused by tobacco are just as various as those caused by your food-allergen."

M good variety of allergic symptoms have osen proved to be caused by tobacco. Some thave mentioned. There are others, one of the most startling of which epileptic coimure, which has followed exposure to tobacco smoke in three subjects. In the first, rejint of il years, a petit mal reaction occurred with a few minutes after she began the first through the folds of a handkerchief into which eigenptts smoke had just been bleum. The second epileptic girl, age 18, had had a limited sympathectomy, which bed left only a small list of "food-allergene", chiefly egg. In the following three had left only a small list of "food-allergene", chiefly egg. In the following three hooths she was in daily technical service, and with two exceptions, free from coisures. On the two occasions while she was avoiding all "food allergene", she was heavily exposed at her apartment to eigarette and eigar smoke. Rach time she suffered a rejaure; once without convulsion and once with typical grand mal convulsions. On both rejaure; once without convulsion and once with typical grand mal convulsions. On both occasions the seizure occurred very soon, in about as half hour, after the exposure to the moke."

Phowever, the advice to smoke less cannot stand up before the fact that blood-pressure has been greatly increased following more exposure to the smoke of others. On one ecchaion a hyperbeasive man went for an automobile drive with a cigar-smoker; his previous diestolic blood pressures had been 74 and 78, but one hour and a half after the drive that blood pressure stood at 96, and after four and a half hours it was 160.

Surprisingly small quantities of tobacco smoke are capable of upsetting its allergic pictims in many voys. A smoken's overcoat or even his breath then not smoking may convey cruel and somewhat prolonged distress to his allergic host — hearturn. Ciarrhoa, smarting eyes, and many others.

It is worth bearingin mind that this same consideration applies also to other aircarried allergic excitants. The following shorthand notes takens out of a letter from J. J. O'Weill impresses this fact:

Bill Jones thinks it was the liquor Joe Jinks served last night that knocked his stomach for a loop the next norming, whereas it was the smoke of Hank Hawkind eight. John Q. Manager comes home with his nerves on edge, appetitio off, and blames it on the strain of his job. It is the dense atmosphere in the smoker and blames it on the strain of his job. It is the dense atmosphere in the smoker during his card game on the 5:15. Bessic Bangain is knocked out after a day of chapping in the city. It wasn't the work she did but the exhaust fluxes of the busees.

These unstudied imaginary illustrations stricks close to actual occurrences in the following statements.

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EXHIBIT K

This exhibit incorporates by reference the following medical studies concerning the effect of tobacco smoke on healthy non-smokers, copics of which are attached to a petition filed with the FAA on behalf of Action On Smoking and Health and John F. Bauzhof III dealing with this same subject:

- 1. Nonsmokers Share Carcinogenic Risk While Breathing
 Air Among Smokers, Medical Tribune, (December 4, 1967)
- 2. Science Magazine, Editorial (December 1967)
- 3. <u>Deutzche Medizinische Wochenscharft</u>, Volume 92 (November, 1967)
- 4. Smoking and Health, Summary of a Report of the Royal College of Physicians of London on Smoking in Relation to Cancer of the Lung and Other Diseases (London, 1962)
- 5. H. Oettel, Cancer Research and Fight Against Cancer, llird Book, 6th Conference of the German Cancer Society in Berlin, from March 12th to 14th, 1954.
- 6. H. Oettel, Smoking and Health, Nachrichten aus Chemie und Technik II (1963), 28
- 7. Journal of Medicine Rheinland-Pfalz 18 (1965) 217
- 8. H. Oettel, Toxic Materials in the Air, Water and Food
 (Short essay in monthly course of instruction for
 doctors (1967) written after a speech of the
 International Congress Lymposium of the doctors in
 Davos and Badgstern on March 6th and 8th, 1967).

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s from the NATIONAL RESEARCH COUNCIL

The National Research Council was organized by the National Academy of Sciences in 1916 in order to provide for a broader participation by American scientists and engineers in the work of the Academy. The Academy was chartered by Congress in 1863 as a private organization with a responsibility for advising the Federal Government in science and technology. Since this responsibility is now shared with the National Academy of Engineering.

ganized in 1964 under the original NAS charter, the Research Council serves, in effect, as an operating agency for both academies.

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DR RELEASE: Monday, December 8, 1969
Mailed 12/2/69)

WASHINGTON—Present levels of carbon monoxide in the air may be affecting an's health and his mental performance. Nevertheless, "facts must be firmly established" additional research before safe environmental standards for carbon monoxide can be set, according to a report issued today by a special committee of the National Research bancil (NRC).

The report, Chronic Exposure to Low Levels of Carbon Monoxide on Human lealth, Behavior, and Performance*, was prepared in cooperation with the Environmental tudies Board of the National Academy of Sciences and National Academy of Engineering at the request of the Coordinating Research Council of New York.

Automobile engines are the largest single contributor of carbon monoxide (CO) of the atmosphere. In New York City, automobile traffic produces 8.3 million pounds daily. Testimated 20 million pounds are emitted daily from motor vehicles in Los Angeles.

Available from the Division of Medical Sciences, National Research Council, 2101 Constitution Avenue, N.W., Washington, D.C., 20418.

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When inhaled by humans, CO joins with hemoglobin to form a compound called tarboxyhemoglobin (GOHb). This restricts the capacity of the blood to carry oxygen to he tissues. Normally, there is a small amount of COHb in the blood stream as a result of physiological activities, but this amount—often referred to as the "background level"—s only 0.4 per cent. Inhaled CO raises the COHb level in proportion to the concentration of CO in the air. For example, when atmospheric contamination reaches the level of 10 earts per million of carbon monoxide, COHb in the blood rises 2 percentage points after 12 hours of continuous exposure. (During 1961-67, levels of 12 parts per million were found 50 per cent of the time on Chicago streets.)

People who smoke cigarattes send more CO into their bloodstreams. Smokers the appearance of cigarettes a day and inhale the smoke raise their COHb levels by an additional five percentage points.

Recent experiments reviewed by the NRC's Committee on Effects of Atmospheric Contaminants on Human Health indicate that COHb levels as low as two per cent can cause certain impairments in mental functions. Pointing to experiments involving arithmetic tests as well as judgments of time intervals, the Committee noted that CO exposure ed to statistically significant decreases in correct responses: the higher the concentration of CO, the greater the number of errors.

These findings could possibly implicate increased levels of CO in faulty decisions made by automobile drivers, especially while they are on monotonous turnpikes, the Committee felt. In particular, the experiments on time intervals have led the Committee to say, "It seems logical that the accurate estimation of intervals of time might be necessary for avoidance of some proportion of potential motor-vehicle accidents; hence, the impairment of this estimation might be plausible as a cause of such accidents."

Certain population groups with pre-existing medical conditions may be espacially susceptible to adverse effects of CO, including persons with severe anemia, chronic pulmonary disease, or impairment of circulation to vital organs. Fetuses and newborn infants are particularly vulnerable. In addition, recent evidence has suggested a slight increase in mortality among hospital patients with myocardial infarctions when the CO level is consistently at about 10 parts per million.

On the other hand, the Committee found no evidence to support the contention at community air pollution exposure could produce any type of chronic effects specific CO. Chronic carbon monoxide intoxication or poisoning—a condition characterized by ome clinicians as including fatigue, headache, irritability, dizziness, and disturbed the eep—was not found, even in groups of people such as garage attendants and Holland while policemen who are chronically exposed to higher-than-normal levels of CO.

"Normal man appears to be able to tolerate some increase in CO concentration the inspired ambient air, but at the cost of some reserve capacity for oxygenation", the ommittee stated. However, "because there is no level of CO in ambient air that is known be without effect", the group cautioned, "it is important to minimize exposure to CO."

The Committee also emphasized the need for more research in five major ategories: behavioral, medical, epidemiological, and environmental studies as well as lose on physiological mechanisms. Among its many research suggestions were studies the effects of CO on driving, vigilance, signal detection, and decision-making; an exestigation of its long-term and short-term effects on the cardiovascular system; research man's ability to adapt to CO; and a cross-sectional study of COHb levels in the population using such personal and environmental characteristics as age, sex, smoking habits, lace of residence, altitude, and season.

Arthur B. DuBois, Professor of Physiology at the University of Pennsylvania, erved as chairman of the Committee. Other members included Rodney R. Beard, Stanford piversity; Bertram D. Dinman, University of Michigan; Leon Farhi, State University of New ork at Buffalo; Robert E. Forster, University of Pennsylvania; John R. Goldsmith, Department of Public Health, State of California; Victor G. Laties, University of Rochester; olbert Permutt, Johns Hopkins University; and John H. Schulte, Ohio State University.

The Coordinating Research Council, which sponsored the report, directs research automotive air pollution problems for the automotive and petroleum industries.

#

rbon Monoxide: 'It Is Important To Minimize Exposure'

ARBON MONONIDE, by the U.S. Public Health vice estimate, is the automobile's chief atmospheric flutant in quantity—67.2 million tons in the United ates in one year by PHS calculation, and 100 million as a year according to studies for Resources for the Tare, Inc. The automobile produces the bulk of perica's carbon mononide. And as moter-vehicle popation grows while urban sprawl reduces the self-menging ability of the cities' air. PHS planners have und, even the advent of stringent emissions controls internal-combustion engines will be insufficient to event increases in CO concentrations in the ambient r of the cities.

Human exposure to CO in ambient air varies withnong other things—lung capacity, duration, traffic, the way the wind blows. Study of the effects of sch exposure on human health rests on no less comlex interweavings of variables. The medical literatic reflects inconsistent experimental conditions and insequent imprecision in conclusions about causes and effects.

Nevertheless, in a critical examination of the eviterce to date, a committee of the National Research louncil Division of Medical Sciences has found nough to warrant a warning: "Because there is no evel of CO in ambient air that is known to be without fleet, it is important to minimize exposure to CO." The study, reported in Effects of Chronic-Exposure

(continued on page 4)

Entrophication is a Significant Puzzler But it May Not Necessarily Be a Dirty Word

When nearly 600 bioscientists gathered at the University of Wisconsin's Madison campus in mid-1967 for an International Symposium on Eutrophication, many present regarded the subject as a dirty word and said so. Eutrophication—the biological enrichment of a body of water—too often had been accelerated by sevage to the point where some forms of plant life were flourishing at the cest of rich resources in food fish.

Since that symposium, sponsored by the National Academy of Sciences-National Research Council. the Atomic Energy Commission, the Navy, the Department of the Interior, and the National Science Foundation, there has been time for updating of papers and for the meeting's planning committee to review new data as well as meeting statements and to reflect on the full implications of research work presented there. The result is a mixed verdict for cuttophication, extensive research recommendations and a compenditum of questions and findings prompting more questions, all brought together in the symposium's newly issued report, Entre-



As nutrients intrease to excess, 273'47' is unbulcated (MicCay, Sailes)

phiention: Gauses. Consequences. Correctives (see "New Publications."

It was pollution-speeded cuttophication and a series of ecological disasters in the Great Lakes that triggered recent interest in entrophication, but the process is of interest for many reasons, including those relating to pollution. The symposium report explains:

"Man's activities, which introduce excess nutrients, along with editor pollutants, into labes, streams, and estuaries, are enusing significant

(continued on page 2)

HEW Drops Pre-Selection Security Probes Of Prespective Science Advisory Panelists

At the urging of more than a score of scientific eiganizations including the National Academy of Sciences and upon the recommendation of a report by Columbia University Teachers College research associate Harlan Reed Ellis, the Department of Health, Education, and Welfare has agreed to eliminate pre-appointment security investigations of individuals who might serve on scientific and technical advisory panels.

In a Washington, D.C., press conference January 2, 11EW Secretary Robert H. Finch mild appointments to advisory panels and committees "will be made on the basis of professional competence—that is, integrity, judgment and ability."

The Academy had called upon the Federal Government earlier to "be guided solely by the criteria of relentific competence, integrity and judgment" in deciding who may serve on Federal science advisory groups concerned with nonmilitary research. In a resolution approved by a 628-21 vote in mail balloting following its agreemen meeting at Darmouth College, the Academy declared:

The members of the National Academy of Sciences affirm that the selection of consultants on a members of advisory committees or panels by government agent is for scientific areas not pertribute to the national defense should be guided solely by the criteria of scientific competence, integrity and judgment. An allegation of questionable loyalty thould not by in-

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JANUARY 1970 . XX No. 1

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here is no level of carbon monexide in ambient air without effect?

Low Levels of Carbon Monoxide on Human Health, avior, and Performance (see "New Publications," p. 8), conducted by the Committee on Effects of Atmosfic Contaminants on Human Health and Welfare, for chairmanship of Arthur B. DuBois, professor of siology at the University of Pennsylvania, for the Fronmental Studies Board of the National Academy of gnees and the National Academy of Engineering. It lowed a request from the Coordinating Research Counan organization maintained by the automotive and oil ustries. This project, backed jointly by the Automobile nufacturers Association and the American Petroleum Stute, is part of a \$10-million CRC air-pollution reach package organized in 1968 in cooperation with the fonal Air Poliution Control Administration.

For obvious reasons, attention has focused on the effects ow levels, such as those most commonly encountered on streets and in traffic tunnels," Environmental Studies and Chairman Harold Gershinowitz says in a foreword the report. "Assessment of these effects has required the elopment of new psychologic and physiologic tests, and acsults are not yet definitive."

What is a low level? Weekday CO concentrations aver-9 parts CO per million parts of air over Los Angeles eways and up to 70 parts per million for brief periods, concentrations in the Boston Sumner Tunnel go as was 126 parts per million. Cigarette-smokers—i8.5 milgaged 17 or over in the United States in 1968, according PHS—draw, per pull, 42,000 parts CO per million parts win cigarette smoke, the Surgeon General's Advisory maittee reported in Smoking and Health in 1964. The liv of 4.2 percent CO in cigarette gases may be compared both concentration of 1.0 to 3.5 percent CO in autonaust.

TO-odorless, colorless—is a discrete pollutant. It plays tole in the photochemical smog reaction except incelly: Technological approaches used to limit CO emissis from autos have resulted in higher emissions of sogen oxides, leading to increased smog production.

The National Research Council committee, asked both appraise the roedical evidence and to recommend paths further research, introduces its work in this context: All those who were invited to take part in this task recognized the relevance of such a study to the long-set task of balancing two desirable factors. One of is optimal human health, and the other is economic being. Although too high a level of CO could contably encroach on the health of same people, too string a limitation of CO preduction could must the econy; although the inhabition of eigeneite sancke and of onabile exhausts does expose people to some CO, both

of these are part of our way of life and play a role in our economy. The Committee decided to limit the scope of the initial report to CO alone, although it was recognized that a greater task would remain, in that other contaminants bear on the problem. I... The report asks that some critical experiments be repeated to confirm existing findings and that other experiments be initiated. Too rash or too rapid judgment concerning the implications of these findings would be costly; facts must be firmly established."

The evidence reviewed by the committee is not notably new. Four years ago, for example, a U.S. Department of Commerce panel under chairmanship of Richard S. Morse of the Massachusetts Institute of Technology observed that CO's toxic effects and operation had "been known and extensively studied for some time." CO combines with hemoglobin (Hb), the oxygen-carrying molecule of 1ed blood cells, to form carboxyhemoglobin (COHb). The portion of Hb present in the form of COHb is not available to carry oxygen.

"If a normal person (non-moker) were to breathe air completely devoid of CO," the complete notes, "he would have about 0.4% COHb in his blood," a background level resulting from normal metabolism. A pack-a-day cigarette-smoker may show COHb levels of approximately 5 percent, and the committee points out that this "could in itself, independently of other constituents of cigarette smoke, produce some adverse health effects,"

There is no clear, simple relationship between exposure and effects, however. The evidence indicates that breathing CO concentrations of 10 parts per million continuous ly for more than 12 hours raises COHb level to 2 percent plus background; a 2-hour continuous exposure to 56 parts CO per million parts air will do the same.

Statistically significant mental impairment, in tests of time perception, was found at COFib levels as low as 2 percent. "No 'threshold' below which one could be sure there was no effect was found, nor was such a threshold completely ruled out," the committee reports. The committee's review turned up apparent correlations between increases in CO concentrations in the air and increased mortality rates among hospitalized myocardial-infarction patients, between increased CO exposure and decreased athletic performance, and between higher blood COMb levels and seeming susceptibility to traffic accident.

The committee recommends behavioral, medical, biochemical, epidemiologic, and environmental research to verify past findings and to identify CO's effects with greater precision. Given the findings thus far, in the findings mental Studies Board's view, "questions with such important implications... should not be allowed to reach any longer than necessary in their current unsettled seven."

-- Grave S. Score

News Report

nearly the everyth from the summary of teat thre conclusions that by the Nedional Research Council Committee on Eyects Reportments on Hamon Health and Welfare in remove of editone of the effects of chronic exposure to low to of earlier monoside.

The importance of CO in the ambient air lies principally the importance of CO in the ambient air lies principally ability of CO to combine with hemoglobin (Hb), a partien of the Hb present in the form of carboxy-soglebin (COHE) cannot combine with oxygen or carry gen from the lungs to the bedt tissues. Although tissues also have other ferroproteins (myoglobin, calrone oxidese, and others) that can combine with at very high partial pressures of CO, such reactions not appear to play any role in the effects on man of these exposures to CO. Furthermore, the reaction become CO and Hb is reversible, so that reduction jof the posure to CO will, in time, make Hb once again available for oxygen transport.

Blood Carboxyhemoglabin Concentrations

14 a normal person (nonsmoker) were to breathe air impletely devoid of CO, he would have about 0.4% Ally in his blood. This is called the "background COHb el." This level is the result of a balance between the of endogenous CO production tresulting from the amal rate of red-cell destruction), endogenous CO merelism (some CO is exidized in the body to carbon. stide, CO2), and climination of CO through the lungs. Iditional COMS is found in the blood if the ambient pired air centains some CO. The amount by which the PBb concentration is increased above the background OHb level depends on the concentration of CO in the relient air . . . and on whether a steedy state has been ached. This stordy state is not reached for 12 hr or ore. For example, breathing 10 ppm of CO cenmously for more than 12 hr gives a steady blood COHb el of about 2% above background, whereas after 2 hr breathing 50 ppm of CO, the blood level is about 2% ove background and still rising.

Probable Effects of Breathing Carbon Monoxide on Mental Performance

Previous tests of the ability to carry out arithmeticihile breathing CO mixtures had shown impairment of exformance at approximately 5% CORb and above, and ossibly even at lower CO concentration levels. A more cent examination of mental performance, using as a iterion the ability to judge slight differences in successive me intervals correctly, showed a statistically significant agairment of this particular function at different cominations of CO concentration and exposure time equiva- . nt to 2% COHb above the background COHb level. his decrement in performance was proportional to the elculated COHb level. No CO "threshold" below which: ue could be sure there was no effect was found, nor was: uch a threshold completely ruled out. Although the; rephanism for the effect of CO on mental function is not nown, the best guess would be that CO probably intertres with the delivery of oxygen to brain tissue, and that my encroachment on the oxygen-carrying capacity of the food may result in some degrement of mental performace, as judged from tests of perception of differences n time intervals. This speculation about the mechanism equires experimental verification.

4. Possible Effects of Carbon Monoxide on the Normal Circulation

Normal man appears to be able to tolerate some increase of CO concentration in the inspired arrhient air, but at the cost of some reserve capacity for expension. Adaptation to increased levels of CO may occur through such mechanisms as increased Hb concentration in the blood, increased cardiac output, possibly increased capillary blood volume, and perhaps slightly increased volume of pulmenary ventilation. . . .

5. Hypothetical Exects of Carbon Monoxide on Susceptible Persons

Although normal persons can compensate for some increase in inspired CO levels, those with some pre-exiting
medical condition might be more susceptible to the effects
of such levels. Because the effects of low levels of CO;
most probably involve deprivation of the tissues of part
of the oxygen that they require, the consequences of this
would probably be accentuated in the following conditions: when there is less than normal exygen in alveolar
air, as there is in emphysemat when there is tissue hypoxia
of a fetus because of limited blood flow to the placenta
during pregnancy; and when there is tissue hypoxia of
other organs with limited blood flow, such as the fingers
and toes in peripheral vascular disease or the myocardium
in coronary vascular disease:...

6. A Possible Effect of Increased Ambient Levels of Carbon Monoxide in Coronary Vascular Discuse

Normal coronary arteries can dilate, and this increases the blood flow through the heart muscle whenever the exygen level of the blood is low. In persons with a compromised coronary vescular bed, it seems reasonable to assume that any encroechment on blood exygen content might result in a reduction of oxygen delivered to the heart muscle. One study in which patients with coronary insufficiency voluntarily and cautiously breathed low levels of CO showed the expected temporary encreachment on the oxygen content of the blood issuing from the myocardism. Another, epidemiologic, study failed to find any increase in the level of heart attacks (myocardial infarction) during air-pollution levels in which the sustained (for more than 12 hr) CO concentration was calculated to be above 10 ppm. But among patients with myocardial infarction who reached a hospital, the mortality rate was slightly higher during weeks in which the ambient CO was calculated to be above 10 ppm than it was during weeks in which CO was thought to be below 10 ppm. This difference was statistically significant. . . .

7. Innocuous Result Anticipated Whenever Exposure to Increased Ambient Carbon Monoxide Levels Is Brief

Exposures to increased CO concentrations for relatively short periods, such as 1 or 2 hr, are innectious unless or until the cumulative effect is such that the blood COHb level has been ruised appreciably. The time required to get halfway to a new plateau of blood COHb after a change in the ambient CO concentration is approximately 4-6 hr (less during exercise). . . .

8. Possible Adverse Health Eijects of Carbon Monoxide Absorbed While Inhaling Cigarette Smoke

Smokers who average a pack of eigarettes a day and inhale the smoke may have blood COHb levels of approximately 5%. It is apparent from the contents of this report that the CO present in cigarette smoke theoretically could in itself, independently of other constituents of eigarette smoke, produce some adverse health effects....

EXHIBIT 4

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Berlin, Roisman and Kessler 1910 N STREET, NORTHWEST WASHINGTON, D. C. 20036 AREA CODE 202 IONE 293-5764 HONY Z. ROISMAN DYS KESSLER March 10, 1970 Mr. Edward C. Hodson Chief, Regulation Staff Flight Standards Scrvice Federal Aviation Administration 800 Independence Avenue, S. W. Washington, D. C. Re: Docket No. 10012 Dear Mr. Hodson: Needless to say we are quite dismayed at the inordinate delay which we are experiencing from the FAA on our petition to ban smoking on airplanes. Although our original petition dated December 8, 1969 specifically invoked the Administrators emergency authority and set January 8, 1970 as a deadline for action to be taken, there has to date been no formal response. We feel that the record, which includes in addition to our submissions, substantial comment from the general public supporting the ban, clearly establishes: the presence of an immediate safety hazard caused by continued smoking on airplanes. We are shocked that the FAA would be so lax in responding to this crises. In order to further facilitate your office in reaching the proper conclusion we are submitting additional materials and references for the record. These materials (marked as Exhibit M) establish further the enormous health hazard to all persons who are subjected to tobacco smoke in the air they breath. Pursuant to our earlier agreement this letter and the materials here submitted will be made a part of the official records. Let me stress again the urgency of this matter and need for action now. Anthony Z Roisman AZR/aw BEST COPY from the origin [Reprinted from the Journal of Physiology, 1959, Vol. 143, No. 3, p. 583.] PRINTED IN GREAT BRITAIN

J. Physiol. (1959) 146, 523-593

THE THE COURSE OF THE EFFECTS OF CARBON MONOMIDE ON VISUAL THRESHOLDS

By M. H. HALPERIN, R. A. McFARLAND, J. I. NIVEN AND F. J. W. ROUGHTON

From the Harvard University School of Public Health, the Evans Memorial, Massachusetts Memorial Hospital, Boston, Mass., and the Department of Colloid Science, University of Cambridge

(Received 8 January 1959)

During the past few years there has been a revival of the controversy as to the relative merits of oxygen and of oxygen-carbon-dioxide mixtures (93% $O_2+7\%$ O_2 , or 95% $O_2+5\%$ O_2) in resuscitation from carbon monoxide poisoning (Marriott, 1955; Hill, 1955). This debate has stimulated a renewed interest in the effects of carbon monoxide on man, and has therefore prompted us, in the present paper, to describe and discuss a number of observations, made in 1944 and 1945, on the prolonged effects of carbon monoxide on vision. The data have not hitherto been published in any detail, though they were presented verbally in preliminary form in 1947 (Halperin, Niven, McFarland & Roughton, 1947). The data, now to be reported, were obtained in the latter stages of a research project by McFarland, Roughton, Halperin & Niven (1944), the carlier results of which were published in full at the time.

In this paper McFarland, Roughton, Halperin & Niven compared the effects on visual discrimination of the anoxia produced (i) by mild degrees of carbon monoxide poisoning (i.e. carbon monoxide anoxia) and (ii) by hypoxic anoxia caused by breathing gas mixtures containing subnormal partial pressures of oxygen. The apperatus used in their tests was the visual discriminometer of Crozier & Holway (1939), which proved especially suited for studying quantitatively the effects of anoxia on normal men (McFarland, Halperin & Niven, 1944). The same procedure was also used for the observations recorded in the present paper and is briefly described later. With this method McFarland, Halperin & Niven found that the 'immediate' effect of a given smount of carbon monoxide in the blood was about the same as that produced by an equivalent amount of oxygen unsaturation in the arterial blood, the effect of the carbon monoxide anoxia being roughly twice as great as in many other physiological tests. They did not, however, examine closely the time course of the effects of carbon monoxide anoxia on visual discrimination. But

a study of their data from this point of view suggests some significant differences from the effect of hypoxic anoxia. In the present paper it is shown that the difference between the two types of anoxia becomes very manifest when the time course of recovery from each of them is compared. The effect of carbon monoxide is found, indeed, to persist for a remarkably long time, even when compared with its slow rate of disappearance from the blood, whereas the recovery from the visual effects of hypoxic anoxia takes place within a few minutes when 100% oxygen is breathed. Prolonged effects of carbon monoxide have often been observed clinically and specific histological lesions in the central nervous system have also been seen in post-mortem examinations after deaths from carbon monoxide poisoning. The experiments to be described in the present paper, on the effects of breathing oxygen at various pressures during the recovery period, not only support this concept qualitatively, but also give some direct quantitative indication that carbon monoxide, in addition to its interference with the unloading of oxygen from the blood to the visual and central nervous systems, may also inhibit competitively some enzyme or other essential element in one or both of these systems.

METHODS

The Crozier-Holmay discriminameter

The procedure in the use of this instrument was bricky as follows. The subject sat in a darkened room and looked with one eye into a microscope ocular. He saw a large circular field, uniformly Illuminated at an intensity corresponding to about 0-002 f.e., i.e. that of moderate moonlight. The centre of the field contained a small point of red light to serve as a fixation point. Just below the latter a 1 × 1° object was presented in flashes of 0-1 sec, and the least intensity distinguishable against the dim background was determined as the mean of ten measurements in each test. The maximum diameter of the light beam at the eye ring of the ocular was smaller than the natural pupil and thus served as an artificial pupil. The stimulus fell on the forez and only cone vision was involved. With well trained subjects the results obtained were remarkably repeatable over a 4-hr period, and although they varied from day to day (presumably with the general condition of the subject) the comparative effects of different factors such as earbon monoxide anoxia and hypoxic anoxia were pretty constant. The subjects used for many of the tests in the previous paper of McFarland, Halperin & Niven (1914) and for all the additional tests described in the present paper, were four young men in the 16-25 year age group, with no physical or ocular abnormalities. They were thoroughly trained in the tests, experience having shown that numerous experiments on a few well trained subjects gave more reliable results than few experiments on numerous, inadequately trained subjects. Owing to lack of time, only one of the four subjects was used intensively for some of the special points investigated below, but it had already been found that his responses were generally very close to the average of the responses of the other three subjects.

Administration of gos mistures and withdrawal of blood samples

The usual duration of an experiment was from 3 to 4 hr, throughout which the subject were a closely fitting ore-nesal mask, to which various gas mixtures were admitted. Visual determinations were made at 10-min intervals throughout the experiments. For the study of hypoxic anoxia normal air was replaced by nitrogen-oxygen mixtures, with oxygen percentages ranging from 16 to 9% atmosphere, thus producing simulated altitudes ranging from 7000 to 20000 ft. (2134-6096 m). Measured amounts of pure carbon menoxide (ranging from 100 to 300 c.c.) were

administered slowly into the intake tube of the mask, resulting in the absorption of about one half of the earbon monoxide administered. During recovery from the anoxia, the subject breathed air, oxygen or "cerbugen", consisting of 93% O₃ 4.7% CO₂. No actual visual determinations were made on the subjects whilst they were breathing earlogen, since the respiratory movements induced by the latter interfered with fovcal faction; instead, the visual determinations were made with the subjects breathing 100% exygen just after the earbogen. The subjects were not told what gas mixtures they were breathing, nor of the time when the changes were made: only in the case of earlogen were they aware of the changes since it was impossible to conceal from them the effects on their own respiration. Control experiments, in which innocuous odours were introduced into the intake tube of the respiratory mask, showed no significant effect on the visual discrimination.

The amount of carbon monoxide in the blood was determined at the beginning of the experiment, at 10-15 min after each carbon monoxide administration and at 20-30 min intervals during "recovery" therefrom. The blood carbon monoxide was determined by the method of Scholander & Roughton (1943), using 120 mm² finger-prick samples (accuracy ±0-1 vol. % CO or ±0-5% COHb).

RESULTS

Experiments breathing air, 100% oxygen or carbogen

Three typical experiments now to be described supply strong evidence of the prolonged and persistent effects of carbon monoxide. Figure 1 shows the results obtained in an experiment in which carbon monoxide was administered

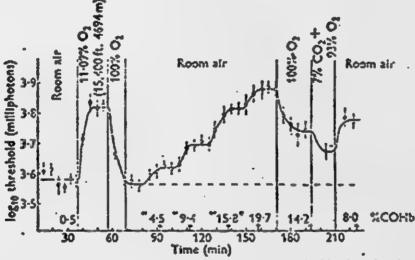


Fig. 1. The effect of progressive increases of COHb percentage in the blood on the visual threshold, and of oxygen and carbogen in counteracting this effect.

whilst the subject breathed ordinary air. Time is plotted horizontally and logarithm of threshold in milliphotons (1 milliphoton = 10⁻³ troland unit) is plotted vertically. A rise of threshold signifies an impairment of visual sensitivity and vice versa. After several determinations in room air, the subject was 'calibrated' by being given a mixture containing oxygen at low; pressure to breathe. His visual response to the hypoxic anoxia induced thereby took 10-15 min to reach completion, the half-time being about 3 min. The recovery, on breathing 100% oxygen, showed a similar time course. Four

successive 115 c.c. dozes of carbon monexide were then given at 30-10 min intervals (over periods indicated by the horizontal arrows), each doze leading to a rise in the visual threshold. The figures at the vertical arrows indicate the values of the COHb percentage at the corresponding moments. The times, both for half response and full response, appear to be at least half as long again as in the initial hypexic anexis test.

It is seen that the administration of 100% oxygen over the period 170-194 min (from the start of the experiment) leads to a relatively rapid elimination of carbon monoxide, with a considerable drop in the visual threshold. The actual time of half elimination of carbon monoxide from the blood, when breathing oxygen; was in this, and in similar experiments, from 45 to 55 min, in reasonable agreement with the observations of Roughton & Root (1945).

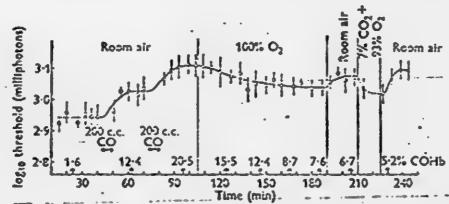


Fig. 2. Recovery of visual thresholds from the effects of carbon monoxide during administration of 100% oxygen. Reverting to room sir demonstrates the relative advantage of breathing oxygen.

Switching the subject to carbogen increased the rate of carbon monoxide elimination (regarded as an exponential process) to about 2½ times the rate when breathing oxygen; the visual threshold showed a further marked decrease. On substituting air, however, an impairment of visual sensitivity reappeared, the actual value of the threshold, even though the blood carbon monoxide content was only \$-0% COHb, being nearly as high as after the third administration of carbon monoxide, at the end of which the COHb percentage was 15-8. It thus appears that it is not only the absolute amount of carbon monoxide in the blood at a given moment but also the previous course of the blood carbon monoxide content that determines the effect on visual discrimination.

Another experiment of the same type is shown in Fig. 2, wherein about the same total amount of carbon monoxide was administered as in Fig. 1, but in two successive doses instead of in four. The total increase in blood carbon monoxide content, i.e. about 10% COHb, was the same as in the case of Fig. 1. During subsequent administration of 100% oxygen for 85 min, the COHb percentage fell from 20-5 to 7-6 at which latter point, even when breathing

100% oxygen, the visual threshold was higher than it had been at 12-4% COHb, when breathing air just after the administration of the first dose of carbon monoxide. On returning to air after the S5-min period of oxygen breathing, the visual threshold rose nearly to its previous maximum height, even though the COHb percentage was now only 6-7 instead of 20-5, the figure reached just after the second dose of carbon monoxide.

Figure 3 provides yet a further illustration of the prolonged effects associated with carbon monoxide. After 30 min of breathing normal air the subject inhaled a single dose of 300 c.c. of carbon monoxide, leading to a rise from 1-1 to 15-0% COHb in the blood. The subject continued to breathe room air

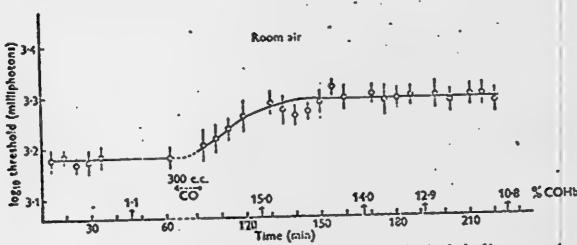


Fig. 3. Prolonged effects of carbon monoxide on visual thresholds, showing lack of improvement despite gradual less of CO from the blood.

for 2 hr, but in spite of a drop-in blood carbon monoxide from 15-0 to 10-8% COHh no recovery of the visual sensitivity occurred. This failure to recover could hardly have been due to fatigue, since in experiments of comparable duration with low oxygen pressures in the inspired mixture, the visual effects were promptly and completely reversed when normal oxygen pressures were restored (cf. Fig. 1 in McFarland, Halperin & Niven, 1944).

A more likely explanation of the results depicted in Figs. 1-3 is suggested by the finding of Roughton & Root (1945), that during the first hour after carbon monoxide administration only 60-70% of the carbon monoxide disappearing from the blood appears in the expired air, the remaining 30-40% appearently diffusing into the tissues and combining chemically therein. Four hours continued breathing of oxygen after the carbon monoxide administration led, however, to a practically complete recovery of the 'tissue-bound' carbon monoxide in the expired air. Presumably the carbon monoxide had combined in the tissues with some compound, from which it is reversibly displaceable by oxygen. Results such as those plotted in Figs. 1-3 could, as mentioned above, be similarly explained by postulating the existence, in the central

nervous system and/or the peripheral visual system, of some enzyme or other visually important constituent, which combines competitively with carbon monoxide and oxygen. The hysteresis in recovery from the effect of carbon monoxide, as is shown so clearly in the experiment of Fig. 3, would be due

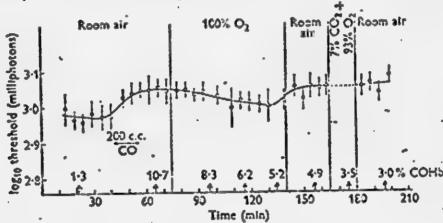


Fig. 4. Reversible changes in the effect of carbon monoxide on thresholds, during administration of oxygen and room air.

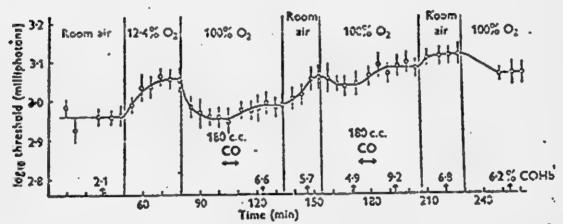


Fig. 6. Exposure to carbon monoxide during oxygen inhalation. A large part of the expected deterioration of visual sensitivity is prevented, but becomes manifest on re-exposure to ordinary air.

to the tightness with which the carbon monoxide is bound to the tissue constituent, resulting in such low gradients of dissolved CO in the tissue that the removal of carbon monoxide by diffusion away into the blood would only be very slow.

Further evidence for this view was provided by the following two experiments. In the experiment plotted in Fig. 4, which was again similar to those of Figs. 1 and 2, only half as much carbon monoxide was administered as in the former cases and the corresponding levels of carbon monoxide in the blood were only of the order of half as high. Even over the range of 3-5%COMb, in which it is hard to imagine that there could have been any significant hindrance to the unloading of oxygen from the blood even when breathing air,

there is still definite evidence of reversible changes in visual discrimination in switching from oxygen to air and vice-versa.

Figure 5 shows that a half to two-thirds of the immediate effect of carbon monoxide is countered if the carbon monoxide is administered whilst the subject is breathing oxygen instead of air. Switching to air from oxygen causes a rapid rise in threshold, even with only 6% COHb in the blood. This is again just what would be expected on the hypothesis of a competitive reaction within the central nervous system and/or the peripheral visual system.

As to the nature of the tissue constituent concerned in this hypothetical combination of carbon monoxide, it would seem that its competitive affinity for carbon monoxide relative to that for oxygen must be of the same order as is that of the haemoglobin of the blood, otherwise appreciable transference of carbon monoxide from the blood to the tissue would not occur. Cytochrome exidase could hardly fill the bill, for even in the absence of oxygen the pressure of CO required for half saturation of this pigment is probably about 20 times greater than the pressure of CO required for half saturation of haemoglobin (Wald & Allen, 1957). In the presence of oxygen the competitive affinity of cytochrome oxidase for carbon monoxide appears, under physiological conditions, to be only of the order of one thousandth of the competitive affinity of haemoglobin. A substance with the properties of myoglobin seems more promising, though even in this case the competitive affinity for CO versus O2 is only of the order of one-tenth that of blood haemoglobin. At all events, however, the results described in this paper appear to point definitely to the presence, somewhere in the visual and/or nervous systems, of some hitherto unrecognized substance with haematin-like properties and of marked physiological importance in vision. Such a substance might well be looked for directly by some adaptetion of the methods which have been so successful in demonstrating the presence of other physiologically important haematin compounds in cells.

Experiments with sub-atmospheric oxygen pressures

At the time (1914-1945) at which the experiments described in this paper were carried out there was considerable interest, from the practical viewpoint of aviation medicine, in the combined effects of carbon monoxide and hypexic anoxia on vision and other physiological processes. Experiments similar to that depicted in Fig. 1 were therefore carried out on each of four subjects, but instead of breathing air during the administration of the feur successive doses of carbon monoxide the subjects breathed nitrogen-oxygen mixtures, with partial pressures of the latter equivalent to altitudes of about 7000, 10000, 13000 and 16000 ft. Two experiments were also attempted at a simulated altitude of about 21000 ft. (6401 m) but the strain on the subjects proved too great for satisfactory results to be obtained. The data, as a whole, do not add

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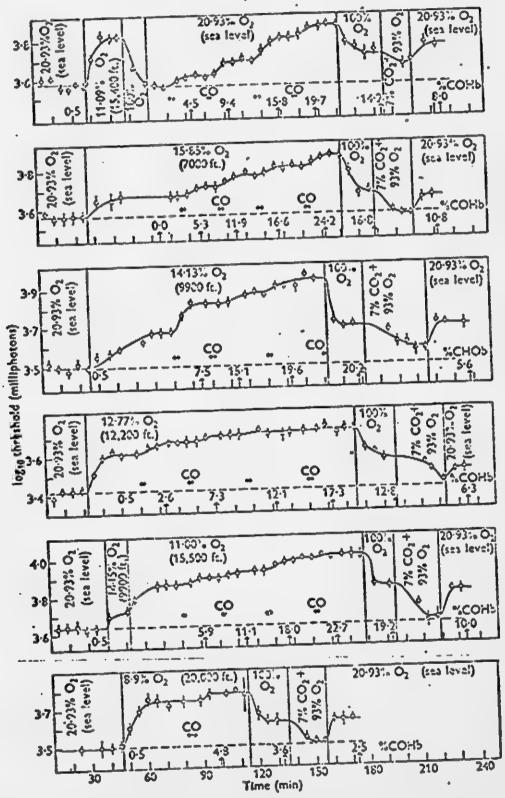


Fig. 6. The combined effects of carbon monoxide and various low-oxygen mixtures on visual thresholds and their reversal by oxygen and carbogen.

warrant being placed on record.

Figure 6 shows the results obtained on one of the four subjects at the various altitudes. It was from such data that McFarland, Roughton, Halperin & Nixon (1944), as already mentioned, concluded that the immediate effect of a given COHb percentage was about the same as an equivalent deficit, below normal, in the O₂Hb percentage of the arterial blood. The countering

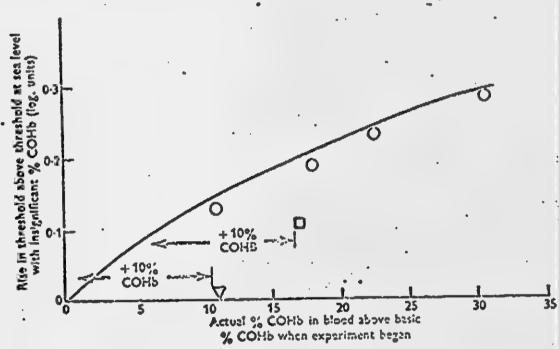


Fig. 7. Calculation of the beneficial effect of oxygen or earbogen in terms of %COHb counteracted (see text). O. Thresholds obtained after successive 20 min periods in which doses of about 100 c.c. of CO were given, i.e. introduced into mask (producing rise of about 5% COHb in each ease); D. threshold and % COHb after 20 min of 100% O₂ after CO administrations; V. threshold and % COHb after 20 min of carbogen (7% CO₃ = 23% O₃) following on the 100% O₂. Actual visual determinations were made with subject breathing 100% O₃ just after the carbogen, since respiratory movements induced by the latter interfered with fovcal fixation.

effect of 100% O₂, carbogen and then of air during the recovery following the administration of carbon monoxide was calculated in the following manner, an experiment at a simulated altitude of 7000 ft. being taken as an illustrative example.

Figure 7 shows (O) the rise in the threshold (after each dose of carbon monoxide) plotted against the increase in COHb percentage above the basic COHb percentage when the experiment began. The square, \square , and the triangle, ∇ , represent the respective results obtained after the successive inhalations of 100% O₂ and of carbogen for about 20 min. It is seen that both the square

and the triangle are to the right of the curve of Fig. 7 by a horizontal distance equivalent to about 10% COHb. The countering effect both of 100% O₂ and of carbogen in this experiment is therefore designated as +10% COHb. The final result after breathing air has not been plotted, as it would have confused the figure, but the countering effect calculated in the same way was +4.0% COHb.

Table 1 gives the averaged countering effects for the four subjects at the various altitudes. The findings therein summarized may be expressed in words as follows.

(1) After administration of carbon monoxide at sea level, 100% O₂ had no effect except that expected from the elimination of carbon monoxide from the blood, produced as the result of 20 min breathing of 100% O₂. After administration of carbon monoxide at higher altitudes, however, 100% O₂ appeared to produce some additional benefit, the countering effect being the equivalent on the average of ±5.6% COHb. The cause of this difference between sea level and higher altitudes, if genuine, is not clear.

TABLE 1. Averaged countering effects (expressed as ± % COHb) of 100% oxygen, earlogen and air after earlon monoxide administration at various simulated altitudes

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Altitudo	Sea level ${(ft.) \choose (m)}$	2134	3048	3983	5029
100% O ₂	0	+6-5	+7.8	+3.5	+4.7
Carbogen	+ 3-0	+7.6	+4-1	+7-2	+ 6.2
All	-5:0	-0.5	-2.2	+0.5	-1-1

(2) At sea level carbogen appeared to have a somewhat more beneficial effect than oxygen, the difference corresponding to about +3% COHb. The latter is additional to the advantage derived from the more rapid elimination of carbon monoxide from the blood, when breathing carbogen, as compared with the rate of elimination when breathing 100% O₂.

(3) On returning to air at the end of the experiment, a residual handicap corresponding to 5% COHb was observed after carbon monoxide administration at sea level, whereas at simulated higher altitudes no significant residual effect of the carbon monoxide was seen. The cause of the discrepancy between

sea level and higher altitudes is again not clear.

(4) At all altitudes, including sea level, the performance when breathing air was the equivalent of about 5% COHb less good than when breathing 100% O₂, thus supporting the concept of a competitive reactor within the visual system.

SUMMARY

1. Visual sensitivity to differences in light intensity was employed as a sensitive index of (i) the effects of carbon monoxide, and of (ii) the persistence of these effects during elimination of this gas while ordinary air, oxygen and carbogen mixtures were breathed.

2. Recovery from detrimental effects of carbon monoxide on this visual function lags behind the elimination of carbon monoxide from the blood, the effect apparently being determined by the duration of the presence of carbon monoxide in the blood as well as its concentration.

3. Administration of 100% oxygen results in an immediate improvement which disappears when ordinary air is again breathed. This suggests the possible existence in the c.n.s. and/or peripheral visual system of some enzyme or other visually important constituent which combines competitively with carbon monoxide and oxygen.

4. Carbogen not only causes more rapid elimination of carbon monoxide from the body, but seems to have a somewhat more beneficial countering effect against carbon monoxide than does oxygen.

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The Effects of Conten Monerale and Altitude on Viewal Threeholds*

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TT HAS BEEN generally reported. that in normal resting subjects acute anoxia due to carbon monoxide poisoning produces less effect on respiration, circulation, mental functioning and fine muscular movements than does acute anothic produced by breathing oxygen at low pressures, as at high altitudes. The first obvious signs of anoxia do not usually occur in CO poisoning until the carboxyhemoglobin (COMb) saturation of the blood reaches about 25 per cent. whereas in hypoxic anonia effects are noticeable when the oxyhemoglobin (OsHb) saturation of the blood has fallen to 85-89 per cent, as compared with its normal value of 95-97 per cent at sea level.10 Thus in the former case a lowering of 25 per cent in the oxygen content of the arterial blood produces only about as much effect as a lowering of 10 per cent produces in the latter case. Although it might thus be concluded that CO anoxia is roughly half as toxic as hypoxic anoxia, it must be admitted that no reliable quantitative

comparisons on the same subjects under controlled conditions have ever, to our knowledge, been reported. Nor have any data been given as to the combined effects of carbon monoxide and hypoxic anoxia.

The latter question is of practical importance in aviation, since flying; personnel may, through inhalation of the exhaust furnes of engines or guns or through excessive smoking, pick up appreciable amounts of CO in their blood. A pilot flying at an actual altitude of, say, 10,000 feet, with appreciable COHb in his blood should be expected to perform only as well as if he were flying at (10,000-hx) feet with no COHb in his blood. Thus, with COHb in his blood, he may be regarded as flying at a "physiological altitude" of (10,000 +x) feet as contrasted with an actual altitude of 10,000 feet. In the absence of CO, the "physiological altitude" is the same as the actual aititude but as the COHb concentration is increased the physiclogical altitude should become steadily greater than the actual altitude. Our main aim in this paper is to determine how the physiological altitude is related to the two independent variables, actual altitude and CONb concentration.

Some preliminary trials and considerations proved to us that it would be practically hopeless to get a con-

The nuterial in this paper was partially presented at the 16th Annual Meeting of the Aero Medical Association at St. Louis, Missouri, September 6, 19-4.

[†]This research has been added by a grant from the Lockheed Aircraft Corporation. Acknowledgment also is made to the Linda Air Products Company for the supplies of nitrogen and length used in these experiments.

vincing answer to these questions by theoretical methods of attack; e.g., by trying to calculate the amount of oxygen unloaded from the blood to active tissues when hypoxic or CO anoxia alone occurs and when hypoxic and CO anoxias are simultaneously present. Instead it seemed necessary to approach the matter in an empirical way by means of a series of tests of the efficiency of the subjects in their various conditions of anoxia. Ideally such tests should be varied enough to sinulate a wide range of the pilot's psychophysiological activities; in practice, most laboratory tests have given results which are quantitatively inconclusive when tested in pure hypoxic or pure CO anoxia, and the only promising types of test known to us are some relating to visual efficiency. Although this is only one of the activities of the pilot, it is certainly an important one. Moreover, the retina is essentially a part of the central nervous system and visual changes may therefore reflect similar alterations in other functions of the central nervous system. Furthermore the test of differential light sensitivity used in this paper has the following important advantages: (a) a high degree of sensitivity to anoxia; (b) the physical measurements involved lend themselves to high precision; (c) the results are independent of the degree of conscious or unconscious effort exerted by the subject; (d) there is lack of awareness on the part of the subject of his performance; and (c) the function possesses stability and constancy both under control and under test conditions.

EXPERIMENTAL METHODS

The apparatus we have employed is the visual discriminomater designed by Crozier and Holway.2 In the use of this instrument, the subject sits in a darkened room and looks into a microscope ocular with one eye. He sees a dim uniformly illuminated circular field, subtending a visual angle of 40 degrees. A small red point of light near the center of the field serves as a fixation point. Just below this point a 1x1 degree square test object is presented in flashes of 0.1 second, and measurements are made of the least intensity which could be distinguished against the illuminated background. The stimulus falls on the foves and therefore only cone vision is involved. A dim field is used because the test is most sensitive to anoxia at low illuminations. A more detailed description of the apparatus and procedure is published elsewhere.*

In the experiments reported here the subject wore a closely fitting oro-nasal mask to which gas mixtures containing different oxygen percentages (simulating various altitudes) were admitted; the expired gases passed into the room through a flutter valve. Measured amounts (100 to 150 c.c.) of pure carbon monoxide, prepared from formic and sulfuric acids, were administered by slowly introducing them into the intake tube of the mask, resulting in the absorption of about 50° per cent of the CO administered. The level of COHb in finger-prick blood at the beginning of the experiment and 10-15 minutes after each CO administration was determined by the microgasometric method of Scholander and

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Roughton¹², using 120 cu. mm. samples (accuracy ± 0.1 vols. % CO or ± 0.5% COHb). The oxygen saturations of the arterial blood were estimated from the contents of venous samples drawn from the dorsum of the hand after immersion in hot water at 45°C to 47°C for 10 minutes as described by Goldschmidt and Light. Such samples, as they showed, closely approximate arterial blood in their O₂ content.

The subjects were young men aged 16 to 25, with no physical or ocular abnormalities. They were thoroughly trained in making the observations involved in the test. Experience has demonstrated that repeated experiments on a few well-trained subjects give more consistent and reliable results than a few experiments on a larger number of inadequately trained ones.

EXPERIMENTAL RESULTS

Figure 1 shows the results of a typical experiment on the effect of hypoxic anoxia at sea level. Each of the points represents the mean of ten . measurements, the vertical line through each point denoting plus or minus one standard deviation. Each such group of measurements is taken within, a period of two to three minutes, the subject resting during the remainder of each five-minute interval. The first readings are taken while breathing normal air; when adequate constancy is obtained, the subject is successively exposed to gas mixtures with progressively lower oxygen tensions. Readings are made at each simulated altitude until constant levels are reached. This usually takes 20 to 30 minutes for

each simulated altitude. With each decrease in oxygen tension the thresholds rise to a higher level, denoting a decrease in visual sensitivity. Finally, the inhalation of 100 per cent oxygen from a cylinder results in a prompt return to the original level. The maximum duration of an experiment is about four hours.

Figure 2A shows the relation between simulated altitude and the resultant rise in visual thresholds. The open circles represent data obtained on one day and the solid circles denote those on another day on the same subject. Fig. 2B gives the relation between these same threshold changes, and the lowering of the percentage of O. Hb in the arterial blood. The sensitivity of this visual function to anoxia varies from day to day, but the general form of the curve remains the same; i. c., multiplying one curve by a suitable constant results in the other curve. This variation has to be taken into consideration when comparing the effects of carbon monoxide on one day with those of anoxia on another day which is taken arbitrarily as the standard. At the beginning of each CO experiment, therefore, the subject's sensitivity is "calibrated" by measuring his response to a given low oxygen level. A correction factor is computed which will adjust this value to that obtained on the "standard" day, for this same oxygen level. All the CO data are then multiplied by this constant to make them comparable to the curve for pure hypoxic anoxia. In most cases, the observed threshold changes had to be multiplied by a factor which ranged between 0.9 and 1.2.

December, 1944

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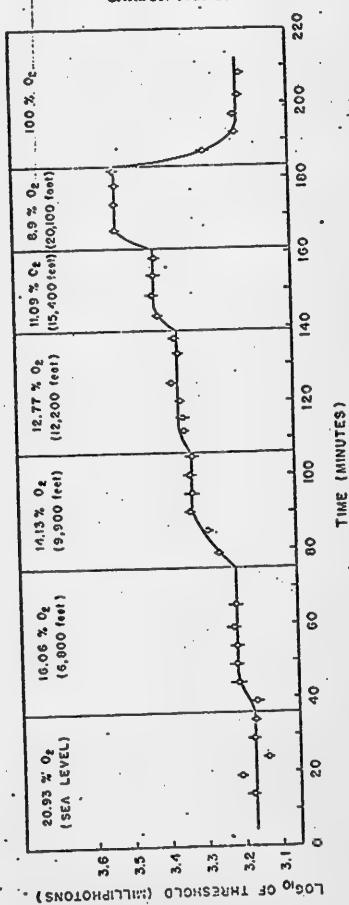
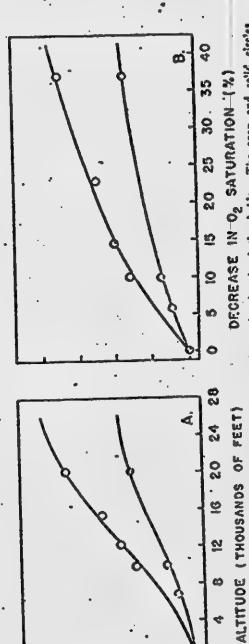


Fig. 1. The effect of progressive degrees of oxygen-lack on visual thresholds. A rise in thresholds denotes a decrease in visual sensitivity.



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PIR. 2. A. The relation between simulated altitude and the resultant rice in visual thresholds. The open and solid electes elenote two experiments on the same satures. B. The relation between decrease in oxygen saturation (as a result of simulated altitude) and the associated rise in visual thresholds.

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The points in Figure 3 represent measurements of the effect of progressive amounts of carbon monoxide on the threshold change, corrected as just On this basis, one might expect that when carbon monoxide is absorbed at high altitudes, where hypoxic anoxia already exists, the effect of the added

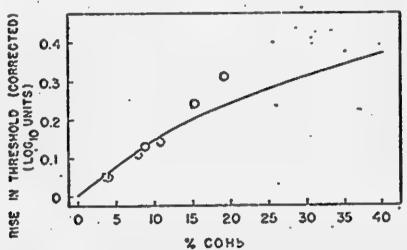
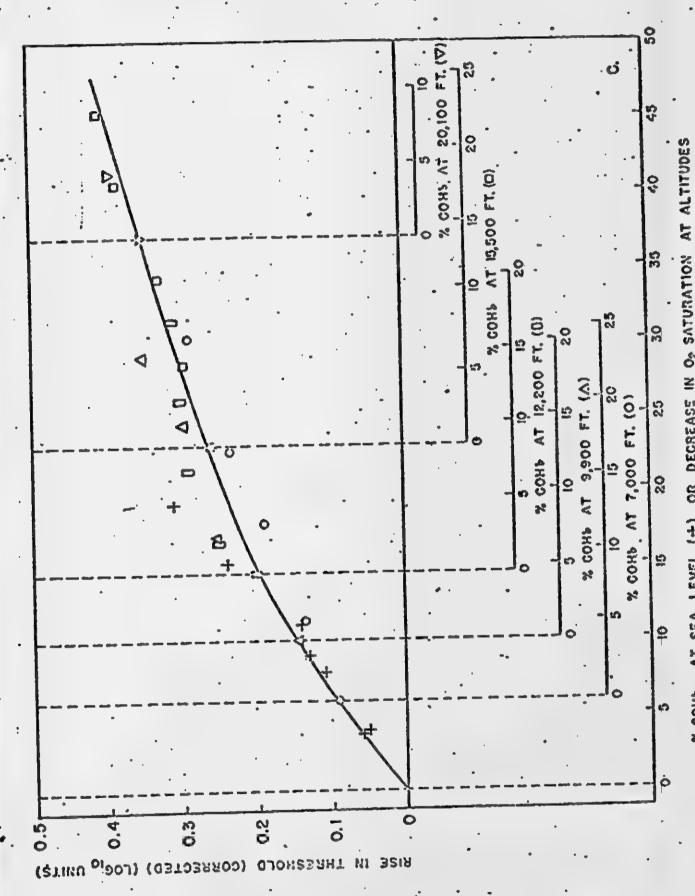


Fig. 3. The relation between the saturation of the blood with earbon monoxide and the resultant rise in visual thresholds. The open and solid circles represent observations in two experiments. The curve is identical with that in Figure 2 R.

described. The open and solid circles again represent two experiments on the same subject. The smooth curve was traced from the upper curve in Figure 2B. The fact that the points fall on or near the curve indicates that the effects of CO anoxia and hypoxic anoxia are practically equivalent, at least, in this type of test. In other words, the effect of a given percentage of COHb is roughly the same as that of an equal less of % O2Hb due to high altitude. This result has been confirmed by similar experiments on three other subjects,* and is in marked contrast with the previously, reported lack of demonstrable effects of CO on the functions mentioned in the introduction, as compared with the effects of hypoxic anoxia.

A complete presentation of the data, with a discussion of the mechanisms possibly responsible for the observed changes, is to be reported elsewhere. % COHb should be the same as the effect of an equal edditional loss of % O2Hb. Figure 4 shows the test of this hypothesis at simulated altitudes of 7,000 to 20,100 feet. The smooth curve was traced from the curve for pure hypoxic anoxia (Fig. 2B). The points represent the corrected threshold changes at each altitude, first without CO (solid symbols read against the lowest scale of abscissas), and then after various amounts of CO were absorbed (open symbols, read against the scale for the appropriate altitude). At each altitude, it is evident that the points representing various amounts of added CO fall fairly closely to the curve for pure hypoxic anoxie, i. e., they are fitted by that portion of the curve to the right of the point corresponding to the decrease in % O₂Hb frior to CO administra-These results were also con-

CARBON MONORIDE AND ALTITUDE-MEFARLAND, ET AL.



The A. The relation between various combinations of hypoxic and CO anoxias and the resultant rise in visual thresholds. The amooth curve, is identical with that for hypoxic anoxia alone (Fig. 2.3), decrete. % COHE AT SEA LEVEL (4) OR DECREASE IN O₂ SATURATION AT ALTITUDES SOLID SYMBOL—BEFORE CO, AT ALTITUDE: OPEN SYMBOL—AFTER CO, AT ALTITUDE

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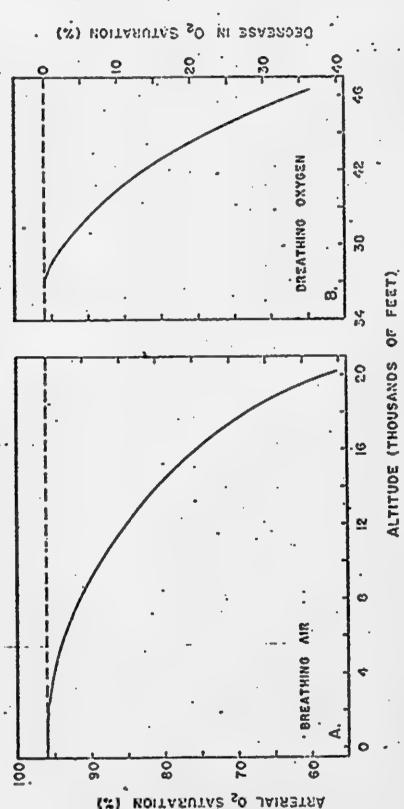


Fig. 5. The relation Between arterial exygen saturation and altitude while breathing air up to 29,000 feet, and while breathing exygen above 36,000 feet. (cf. Dill and Ilali, Ref. 3.)

firmed by experiments on three other subjects.

. These results give us reasonable assurance that, as regards visual intensity discrimination, we have a quantitative basis for calculating the effect of carbon monoxide in the blood on the pilot's "physiological altitude" as defined in the introduction. Thus, if a pilot flying at an altitude A₁, where the decrease in his arterial % O₂Hb is m, then absorbes n % COHb, his physiological altitude, A₂, increases to a value roughly corresponding to a loss of (m + n) % O₂Hb in the absence of CO.

The calculation of the physiological altitude, in accordance with the above empirical formulation, depends only upon the relationship between altitude and arterial oxygen saturation in the absence of CO. There is a considerable variation of arterial oxygen saturation among various individuals at any given altitude, and a much smaller dayto-day variation of any one individu-2l. In order to obtain the most representative values, our own data were combined with those of Dill and Hall³ for subjects breathing air, with which they agreed closely. The resultant mean curve is presented in Figure 5A.

The curve relating % COHb to physiological altitude (Fig. 6) at sea level is identical with that relating decrease in % O2Hb to altitude, in the absence of CO. The method of determining the physiological altitude for various amounts of COHb at true altitudes above sea level may best be shown by an example. Thus, we will work out the physiological altitude corresponding to an actual altitude of 12,000 ft., but in the presence of 20%

COHb. The graph in Figure 5A shows that in the absence of CO, the decrease in the arterial % O₂Hb at 12,000 ft. is 11%. The addition of 20% COHb results in a physiological altitude corresponding to a decrease of (11 ± 20) = 31% in the oxygen saturation. According to Figure 5A, this aititude is 18,750 ft. This point is represented by A in Figure 6B. The addition of 20% COHb at 12,000 ft. has therefore raised the physiological altitude by 6,750 ft.

Figure 6B shows the relationship between physiological altitude and % COHb for actual altitudes of 0, 6,000, 9,000, 12,000, 15,000 and 18,000 it. calculated as in the example just given. It is evident that this is a family of curves which can be derived from the curve for sea level, by transposing the latter to the left in suitable steps.

The usefulness of Figure 6 may be fillustrated in the following way. Standards relating to altitudes at which supplementary oxygen should be used might logically refer to physiological rather than actual altitudes since the degree of anoxia suffered by the individual is the important factor. Thus, if a physiological altitude of 12,000 ft. is taken as the level at which oxygen is to be used, this value would be reached under any combination of hypoxic and CO anoxias which produce this total effect, e. g., 12,000 ft. actual altitude + 0% COHb (point B); 9,000 ft. actual altitude + 5% COHb (point C); 6,000 ft. actual altitude + 9% COHb (point D); or 11% COHb at sea level (Point E).

Data for arterial oxygen saturation of subjects breathing oxygen at altitudes above 35,000-ft., according to

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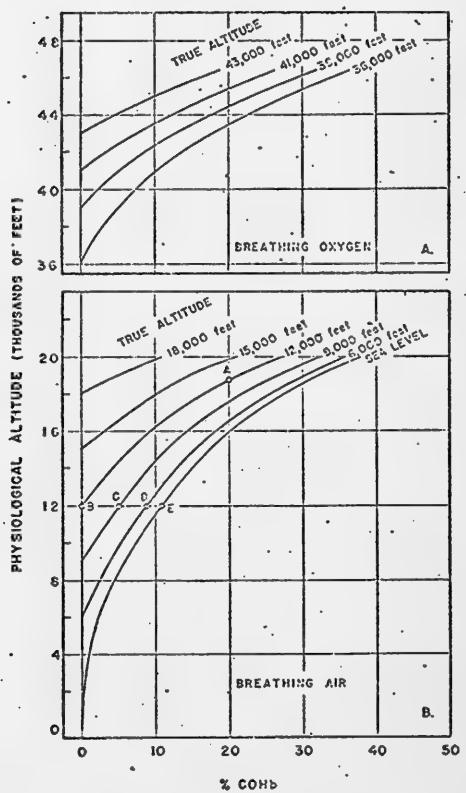


Fig. 6. The relation between physiological sittinde and per cent earboxy-hemoglobin at various true altitudes.

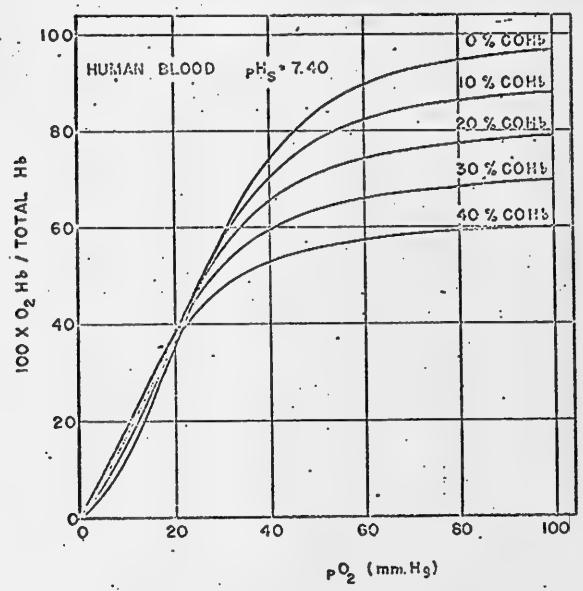


Fig. 7. The relation between arterial oxygen saturation and the partial pressure of oxygen in the presence of various percentages of earloxylemoglobin (Cf. Roughton and Darling, Ref. 11).

Dill and Hall, are also shown in Figure 5B and were used to calculate the effect of adding CO at these altitudes. The computed physiclogical altitudes which result from absorbing CO at actual altitudes of 36,000, 39,000, 41,000 and 43,000 ft. are shown in Figure 6A.

The relationship between the partial pressure of carbon monoxide in the air (pCO), and the physiological altitude which would result if the subject were exposed to it for a sufficient time to allow for equilibrium with the blood at various altitudes will next be presented. In order to plot these curves, it is necessary to compute the pCO in equilibrium with various percentages of COHb at the above altitudes. These computations depend on the following: (a) Figure 5, relating altitude to 50 O₂Hb in the absence of CO;

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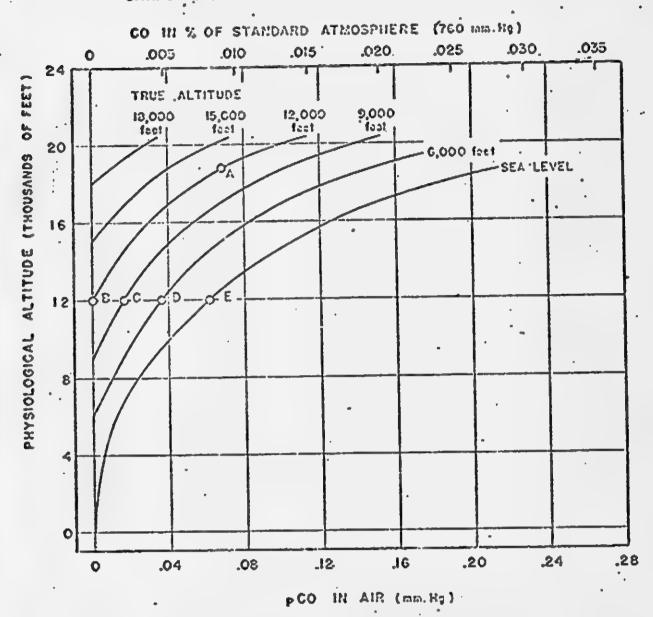


Fig. 8. The relation between physicionical altitude and the partial pressure of carbon monexide in sig at various true altitudes when equilibrium with the blood has been reached.

(b) Figure 7, showing the relation between % O₂Hb (i. c., 100 × [O₂Hb] and oxygen pressure [Total Hb] with various percentages of COIIb present, computed according to the methods described by Roughton and Darling¹¹; and (c) the equation $pCO = \frac{pO_2}{210}$ [COIIb]

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As an example we will work out the pCO corresponding to 20% COHb at 12,000 ft. According to Figure 5A, the % O₂Hb at 12,000 ft. in the absence of CO is 85. Referring to the top curve in Figure 7, it is seen that the pO₂ corresponding to this saturation is 51.6 mm. Hg. Assuming this same oxygen pressure in the presence of CO, Figure 7 shows that the % O₂Hb after 20% COHb is added becomes

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71.7. Substituting these values of pO₂, [COHb] and [O₂Hb] into the above equation, we obtain

 $pCO = \frac{51.6}{210} \frac{(20)}{(71.7)} = 0.0385 \text{ mm. Hg.}$

The physiological altitude for 20% COHb at 12,000 ft. has already been computed as 18,750 ft. This physiological altitude is therefore plotted against 0.0385 mm. Hg, on the curve for 12,000 ft. actual altitude (point A) in Figure 8.

Curves relating physiological altitude to pCO at actual altitudes of 0, 6,000, 9,000, 12,000, 15,000 and 18,000 ft. were computed as in the above example, and are presented in Figure 8. It must be remembered that these curves apply only when the duration of exposure is sufficiently great for equilibrium between the blood and the CO in the air.

• Under such conditions, these curves may be used in a manner similar to those of Figure 6, in determining the various combinations of hypoxic and carbon monoxide anoxia which result in a given physiological altitude. For example, a physiological altitude of 12,000 ft. may result from exposure to 12,000 ft. actual altitude in the absence of CO (point B); 9,000 ft. actual altitude, pCO = 0.016 mm. Hg (point C); 6,000 ft. actual altitude, pCO = 0.036 mm. Hg (point D); or pCO = 0.036 mm. Hg (point D);

From a practical point of view, this graph may be used to determine the extent to which equilibrium with a given concentration of carbon monoxide in the air may affect the airman's physiological altitude. For example, if a pilot is flying at 6,000 ft. with

oloos% CO in the air, his physiological altitude is increased to about 12,000 ft.; this amount of CO at 9,000 ft. raises the physiological altitude to almost 15,000 ft.; at 12,000 ft., to approximately 17,000 ft.; and at 15,000 ft. this amount of CO results in a physiological altitude of 19,000 ft. Thus the pilot's physiological altitude is considerably increased over the true altitude at which he is flying. These figures assume that the airman is exposed to this amount of CO for at least several hours.

The rate of uptake of CO during brief emposures to the gas is essentially the same at high altitudes as at sea level, provided a correction is made for the increase in ventilation rate which occurs at high altitude.4 The rate of uptake varies with the partial pressure (or concentration) of CO in the air and the ventilation rate or degree of activity of the subject. If one knows the time of exposure and the concentration of CO in the air, the following approximate formula may be used to compute the resultant % COHb: % COHb == k (CO concentration in 50 of standard atmosphere) (time in minutes). The constant k has a value of about 3 for a resting individual; 5 for one engaging in light activity; 8 for light work; and 12 for hard work. This formula may be used to compute the % COHb in an individual who is exposed to CO for a time which is too short for equilibrium, and the resultant physiological altitude may be determined from Figure 6. Conversely, one may compute the time of exposure to a given % CO in the air which may result in a given physiological altitude. As

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TABLE 1. THREE CONDITIONS OF EXPOSURE TO CAREON MONOMIDE WHICH PRODUCE PHYSIOLOGICAL ALTITUDES OF 9,000 AND 12,000 FEET

-		AMOUN	Resultant		
	Actus! Altitude	Rapid Absorp- tion of CO During Ericl or Exposure	Exposure to Given pCO Until Equilibrium	Exposure to 0.01%-CO* or for Vary-ing Times.	Physiological Altitude
:	feet	resultant & COHb	pCO in mm. Hg	time of exposure in minutes	feet
1 1	6,000	6.0 3.11	0.031 0.01 <i>6</i>	120 76	9,000 9,000
:	6. 000 . 9. 000	• 11.0 9.0 5.0	0.061 0.035 0.016	220 189 100	12,010 12,630 12,600

*For other concentrations, the time of expenser is inversely proportional to the % CO.

an example, we shall compute the exposure time to CO in a concentration of 0.01% of a standard atmosphere which results in a physiological altitude of 12,000 feet if the individual is at an actual altitude of 6,000 ft. and engages in light activity. According to Figure 6B, a carboxyhemoglobin saturation of 9% is necessary. Employing the above equation, Time in min-

utes =
$$\frac{\% \text{ COllb}}{5 (\% \text{ CO})} = \frac{9}{5 (.01)} = 180.$$

Table I shows how physiological altitudes of 9,000 and 12,000 ft. are reached by the three types of CO exposure already discussed: (a) sudden absorption resulting in a given % COHb; (b) exposure to a given pCO until equilbrium; and (c) exposure to a given CO concentration in the air for given times not resulting in equilibrium. The figures are calculated in the same way as in the previous examples. The altitudes 9,000 and 12,-000 feet are chosen as being near the lower and upper limits of those usually considered as critical for the pilot, requiring the use of oxygen.

The visual test employed in this study proved to be so sensitive that even the effects of the small quantities of carbon monoxide absorbed from

cigarette smoke were clearly demonstrable in a few preliminary experiments. Deep inhalation of the smoke from a single eigarette causes an increase in the earboxyhemoglobin saturation of almost 2 per cent. Although previously such a small amount was considered totally insignificant, it nevertheless caused a distinct impairment of visual sensitivity. After three eigarettes, the blood COHb was 4 per cent and the effect on one subject's visual sensitivity was equal to that at an altitude of almost 8,000 feet. A similar rise in COHb produced by inhalation of pure CO produces about the same effect (see Fig. 6B). On the other hand, the smoking of three cigarettes by this subject without inheling resulted in no visual change. In this case there was no change in COHb although the nicotine absorption is about 60% as great as during smoking with inhaling.1 It thus appears likely that only the carbon monoxide is responsible for the visual effect of smeking. This conclusion is to be checked on additional subjects.

CONCLUSIONS

These studies indicate that carbon monoxide, in much smaller amounts than was previously supposed, may

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have harmful effects. The magnitude of the effect of CO at sea level was consistent with Heim's' implicit assumption that the effect of carbon monoxide is dependent on the resultant arterial oxygen saturation (or decrease in % O, Hb). The effect of CO at the higher altitudes, however, was . somewhat greater than that which one might expect on the basis of Heim's assumption.

The degree to which the present finding may be extended to other physiological functions remains to be demonstrated. A correlation between some visual functions and the electroencephalogram during anoxia has been demonstrated. If the higher functions of the central nervous system behave in a manner similar to visual intensity discrimination during CO anoxia, then the possible seriousness of this toxic agent in aviation is much greater than has often been supposed. The importance of guarding against the entry of exhaust gases into an airplane, and of adequate removal of gases liberated by gunfire, is therefore intensified. The amounts of CO allowable in the air of cockpits in aircraft while in flight should always be considered in terms of the accentuation of the effects of altitude. The importance of refraining from excessive smoking, particularly before a flight, is also made obvious. Further experiments are planned to discover the rapidity and extent to which the visual effects of CO in the blood can be

counteracted by administration of oxy-

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THE EFFECTS OF EXPOSURE TO SMALL QUANTITIES OF CARBON MONOXIDE ON VISION

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The Effects of Exposure to Small Quantities of Carbon Monoxide on Vision
Ross A. McFarland

L. Introduction

The purpose of the present paper is to discuss the results of experiments on the effects of small amounts of carbon monoxide (CO) on visual perception.

The quantities of CO inhaled during these studies varied from 25 to 100 ppm in the inspired air. The tests of visual perception involved measurements of both central (cones) and peripheral (rod) vision during 20-30 minutes of dark adaptation. Also, tests for differential light sensitivity were made on foveal vision and on visual acuity.

There were several important considerations in the selection of the visual tests. The first and most important related to the fact that the retina of the eye is essentially a part of the central nervous system. Such cells are known to be very sensitive to lowered oxygen tension. This holds true whether oxygen want is produced by high altitude or by various agents which cause lowered oxidation. Secondly, tests of simple reaction time and motor coordination, as in pursuit tasks, have not shown impairment from CO until fairly advanced stages are reached. Therefore such tests do not offer the desired sensitivity for showing the effects of small amounts of CO.

Thirdly, in studies using a wide variety of sensory and mental tests at high altitude we have found that the most sensitive ones relate to the response of retinal cells to light stimuli at low levels of illumination. This type of response also results from lowering the blood sugar following the injection of insulin. It is well known that the brain is largely dependent upon carbohydrate

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metabolism. Similar impairment has been noted with increasing age where there appears to be a reduction in the oxygen being delivered to the cells of the central nervous system.

II. Development of Sensitive Tests

The accuracy of many studies in the past has been limited by the nature of the specific performance tests being used as an index of lowered oxygen tension. To obtain satisfactory results a test should possess certain features, including: (a) a high degree of sensitivity, so that small changes can be readily measured; (b) precision of the physical measurements involved in the test; (c) independence of the results from the degree of conscious effort which may be exerted; and (d) stability of the function during control experiments when the physiological stresses are not applied. The visual tests selected in these studies possess all of these desired characteristics.

- a. Tests that detect and scale increased effort: There are several approaches to control the effects of increased effort. One of these is concerned with spare reserve capacity and of peripheral vision. The deterioration of performance on a primary task with increased load from a secondary task is a good example. In this way the effects of carbon monoxide can be measured in terms of the steepening gradient of these spare capacity measures.
- : Measures of speed and accuracy: Another way of studying one's reactions to carbon monoxide would be to sacrifice speed for accuracy or vice versa. Such trade-offs, however, need not indicate degradation in capacity.

 Until recently, there was no way of combining these two measures. With the development of information theory a non-arbitrary way of combining measures

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of speed and accuracy into a single "rate-of-information-transmission" measure is available. In this way it is possible to determine the magnitude of task-induced stress.

Experiments carried out in our laboratory over a period of years reflect the wide use of (1) visual tests which can be carried out in ways that a subject is not aware of the nature of his response and thus not subject to the influence of exerting greater effort. Also, tests are being used to study (2) the maximum rate of information processing and transmission, (3) the capacity for visual and auditory short-memory stores, and (4) tests which measure the trade-off between speed and accuracy of responses. Occasionally the number and complexity of responses have been so great that computer simulation has been required as a technique for exploring the interaction of these functions. (McFarland, 1969)

III. Methods of Measurement

The visual functions selected for these studies were as follows: (1) visual acuity at low levels of illumination; (2) dark adaptation; (3) differential brightness sensitivity; and (4) critical flicker fusion (See Figures 1 and 2).

In the experiments in which foveal visual acuity was studied, a red filter was used so as to involve primarily the behavior of the cones of the retina. In the other experiments complete dark adaptation curves were obtained with a Hecht-Shlaer apparatus (1938). A light of 1500 millilamberts was exposed to one eye for 3 minutes. This was bright enough to involve both cone and rod vision, and the exposure was sufficiently long to produce the bleaching effect. An artificial pupil (3 mm in size) was used since it is known that the size of the pupil varies with age.

decreased visual acuity very markedly at low levels of background illumination.

The variations in foveal stimuli were presented against backgrounds which

varied in intensity over a range of about 1:100,000. At very high intensities, as

in sunlight, oxygen lack produced practically no change.

In the next series of experiments differential sensitivity of the human fovea was studied in relation to light intensity under sea level conditions and at simulated altitudes up to approximately 20,000 feet. The final measurements were made while the subjects inhaled 100 per cent oxygen. The effects of progressive degrees of oxygen deprivation on foveal differential brightness sensitivity, at a constant field intensity, are shown in Figure 4(A), and the control in Figure 4(B). The impairment with increasing degrees of hypoxia is very striking, as is the recovery with 100 per cent oxygen (McFarland, Halperin and Niven, 1944).

These tests proved to be the most sensitive ones available for studying the initial effects of high altitude, some subjects manifesting significant impairment at 4,000 to 5,000 feet altitude. It provided experimental evidence for the necessity for pilots to inhale oxygen from the ground up in night flying. At a simulated altitude of 18,000 feet, the impairment was very marked. The percentage increase in light threshold at 15,000 feet was approximately 100 per cent; hence almost twice as much light would be required to see a given stimulus under this condition as at sea level. At 20,000 feet, there was an increase in the threshold of approximately 200 per cent. The effects of altitude on light sensitivity are summarized in Figure 5 (McFarland, 1963).

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V. The Role of Oxygen Want in the Ageing Process

The theory that oxygen is one of the most important variables in the neural changes with age has been explored in our laboratory. It is well known that as a person grows older, more light is needed to see a specific stimulus, especially if the background illumination is low. A study was carried out on 240 subjects varying in age from 16 to 69 years, using the same apparatus described above to obtain complete dark adaptation curves. A high correlation was obtained between age and different periods on the dark adaptation curves. Intercorrelations within the data were highly consistent throughout the entire range of dark adaptation. At the end of two minutes the youngest subjects were almost five times as sensitive as the most aged, and at the end of 40 minutes, more than 240 times as sensitive as the oldest ones. A composite curve from various experiments using the same experimental procedure are shown in Figure 5. Also, the effects of altitude are shown on this same graph (McFarland, 1963).

In other experiments it was found that critical flicker frequency was adversely affected in older subjects, especially if the light-dark ratio in the flicker cycle was controlled. In the field of complex mental functions, tests for immediate, or short-term memory were strikingly impaired. Also, a larger number of temporary "blanks" (response blocking) were present. This phenomenon is very familiar to those who are approaching older age ranges.

It has been well established that prolonged exposure to carbon monoxide will cause permanent impairment of cortical tissue, and numerous experiments have shown that there is atrophy of cerebral tissue in senescence. Recently the question has been raised as to whether hyper-exygenation can materially

improve the psychological symptoms of senility, especially during short periods of time. In the patients studied by Jacobs (1969) significant periods of improvement were observed in those with severe deterioration of cognitive function. These and other experiments suggest some of the interrelationships that may exist between the effects of advanced age and those attributable to carbon monoxide.

VI. The Role of Carbon Monoxide in Accentuating the Effects of High Altitude

A series of experiments will now be reviewed having direct implications for determining maximum allowable concentrations of CO in the atmosphere for men working in automobile tunnels, or exposed to other toxic agents. Any toxic agent that influences oxygen transport in the blood or oxygen utilization in the tissues might be expected to accentuate the effects of high altitude, fatigue or the ageing process.

1. The physiological effects of carbon monoxide. It is well known that when carbon monoxide combines with haemoglobin, the oxygen-carrying capacit of the blood is reduced. Furthermore, carbon monoxide displaces the oxygen dissociation curve to the left, thus inhibiting the release to the tissues of even this decreased amount of oxygen. As a result, there is a marked lowering of the tissue oxygen tension. This would naturally accentuate the hypoxia caused by exposure to high altitude.

Theoretical considerations have led to the conclusion that the venous (or even tissue) oxygen tension, which is associated with the loss of a given percentage of the oxygen capacity of the blood due to baturation with carbon monoxide, is the same as that caused by a similar decrease in arterial oxygen

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monoxide would be expected to have an effect equal to that of an altitude of about 8,000 to 10,000 feet on those functions which depend on the tissue oxygen tension.

were carried out to determine the effect of carbon monoxide and hypoxia. Experiments were carried out to determine the effect of carbon monoxide on visual thresholds, both in normal air and in combination with varying degrees of oxygen deprivation. The results were entirely consistent with the theoretic expectations. It was found, for example, that 5 per cent saturation with carbon monoxide depresses visual sensitivity to as great an extent as anoxia at 8,000 to 10,000 feet altitude. Fifteen per cent saturation caused an impairment corresponding to that at about 15,000 to 19,000 feet. At various simulated altitudes, the addition of carbon monoxide, causing a given percentage of saturation produced an effect equal to that at an altitude sufficient to produce an additional loss of arterial oxygen of the same amount. The 'physiological altitude' of a subject undergoing exposure to the combined effects of hypoxia and carbon monoxide is shown in Figure 6. (McFarland et al., 1944) For example, if a pilot is flying at 6,000 feet altitude with 0.005 per cent carbon monoxide in the air, his physiological altitude is increased to about 12,000 feet. (Cf. point C in Figure 6)

The test proved to be so sensitive that even the effects of the small quantities of carbon monoxide absorbed from eigarette smoke were clearly demonstrable. Deep inhalation of the smoke from a single eigarette caused a carbon monoxide saturation of almost 2 per cent. After inhaling the smoke of three eigarettes, the saturation of the blood with carbon monoxide was equal to that at an altitude of about 7500 feet. The loss of arterial oxygen saturation at

this altitude is about 4 per cent. The absorption of a similar amount of carbon monoxide at 7500 feet: altitude causes a combined loss of sensitivity equal to that at 10,000 to 11,000 feet. The results on two subjects are shown in Figure 7. (McFarland, 1963)

In recent years an interesting problem has arisen in the building of highway tunnels at high altitude in the Rocky Mountains. For example, what would be the effects on drivers and passengers in the tunnels at 11,000 feet? Three possible sources of hypoxia would result as follows: (1) decreased partial pressures of oxygen due to elevation; (2) inhalation of carbon monoxide from eigarette smoke; and (3) inhalation of carbon monoxide discharged in motor vehicle exhaust. By means of the above nomogram the combined effects of altitude, smoking, and tunnel carbon monoxide were determined, and it was recommended that the CO concentration in the tunnel be maintained below 25 ppm, among a series of other recommendations in regard to smoking and the use of oxygen for engineering purposes (Miranda et al., 1967).

VIL. The Effects of Carbon Monoxide on Light Sensitivity

In experiments carried out several years ago we (Halperin, McFarland, Nivin, and Roughton, 1959) exposed healthy male adults aged 16 to 25 years to measured amounts of pure CO ranging from 100 to 300 ml. The CO was injected slowly into the intake tube of a close-fitting oro-nasal mask. The usual duration of the experiment was from 3 to 4 hours. The total length of exposure to CO was from 10 to 15 minutes, and this resulted in COHb levels of up to almost 20 per cent. Visual threshold determinations were made at 10-minute intervels throughout the experiments. The subjects sat in a darkened room and looked

with one eye into a microscope ocular. Each subject saw a circular field, uniformly illuminated at an intensity of about 0.002 foot-candle. The center of the field contained a small point of red light to serve as a fixation point. Just below the latter, a 1 x 1 degree object was presented in flashes of 0.1 second. The lowest intensity distinguishable against the dim background was determined from the mean of 10 measurements in each test. As can be seen in Figure 8-6, a measurable impairment in visual function was detectable when the blood COib concentrations reached 4 to 5 per cent;:at higher COHb concentrations, greater degrees of impairment were measured (See Figure 9). The combined effects of carbon monoxide and various low oxygen mixtures on visual thresholds are shown in Figure 10.

One of the interesting findings was that recovery from the detrimental effects of CO on visual function lags behind the climination of CO from the blood (See Figure 11). This impairment appears to be determined by the duration of the presence of CO as well as by its concentration. The time course followed by the COHb and visual impairment appears to depend on the composition of the gas during the post-anoxic period. "Carbogen" was 2 1/2 times more effective than 100 per cent oxygen in promoting CO elimination and an associated drop in the visual threshold. Subsequent exposure to room air caused an increase in the visual threshold (i. c. further impairment in visual perception), although the COHb levels began to fall (See Figures 10 and 11).

The experimental procedures described above show the value of using such techniques as an index of the underlying biochemical and physiological processes occurring in nervous tissue. One possible hypothesis is the existence in the central nervous system or visual system of some enzyme of other vitally important constitutent which combines competitively with carbon monoxide and carbon dioxide.

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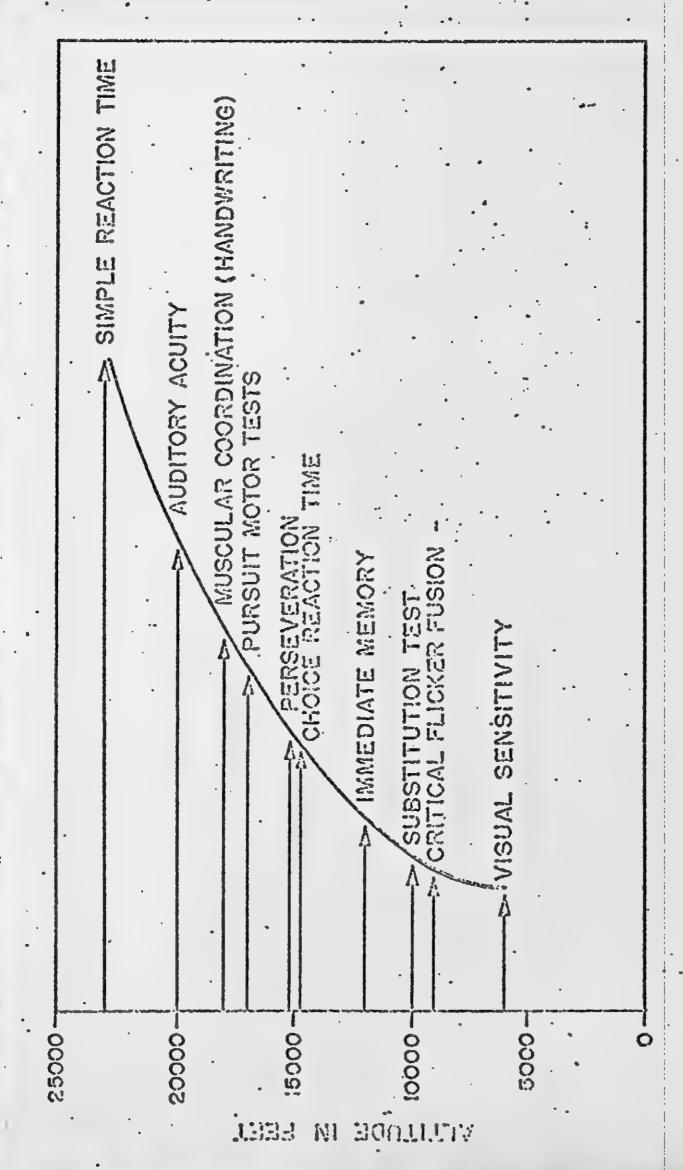
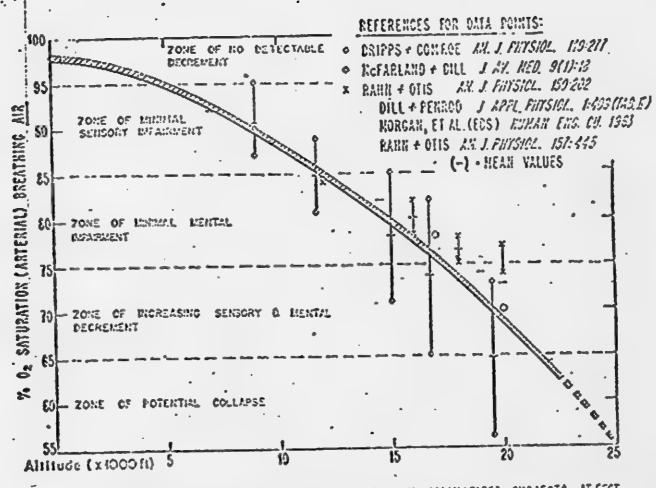


Figure 1. Altitudes at which a decrement is observed in selected tests. McFarland, 1963)





HEAR BRACHIAL ARTERIAL O2 SATURATION (%) IN UNACCLIMATIZED SUBJECTS, AT REST OR LIGHT WORK, AT VARIOUS ALTHRUDES. (NUMEROUS SCURCES)

Figure 2. The relationship between arterial oxygen saturation and altitude for several performance tests in unacclimatized subjects. Data combined from various studies. (McFarland, 1969)

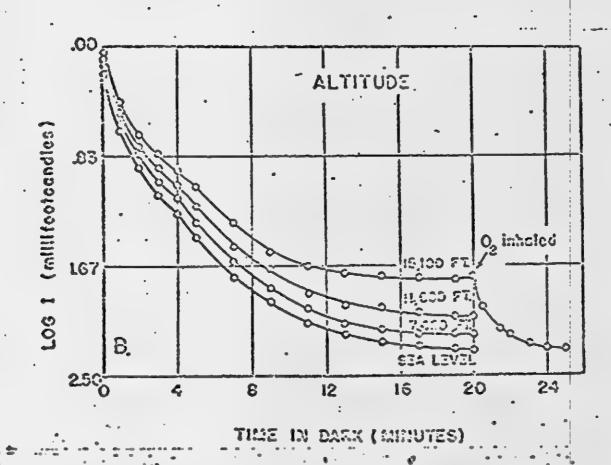


Figure 3. The average light intensity thresholds for 20 subjects during 20 minutes of dark adaptation and under various conditions of oxygen deprivation. Note the recovery of sensitivity upon inhaling oxygen. (McFarland and Evans, 1939)

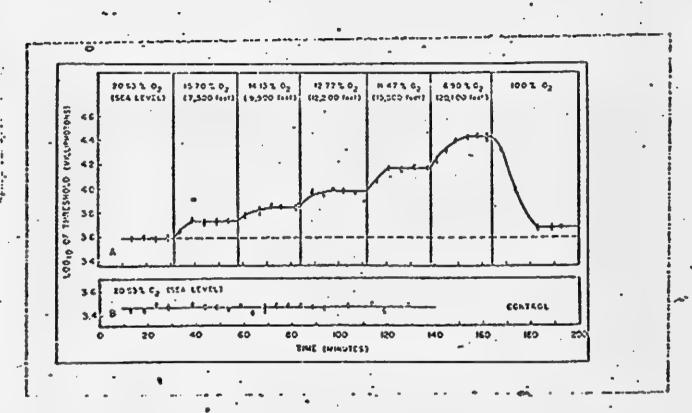
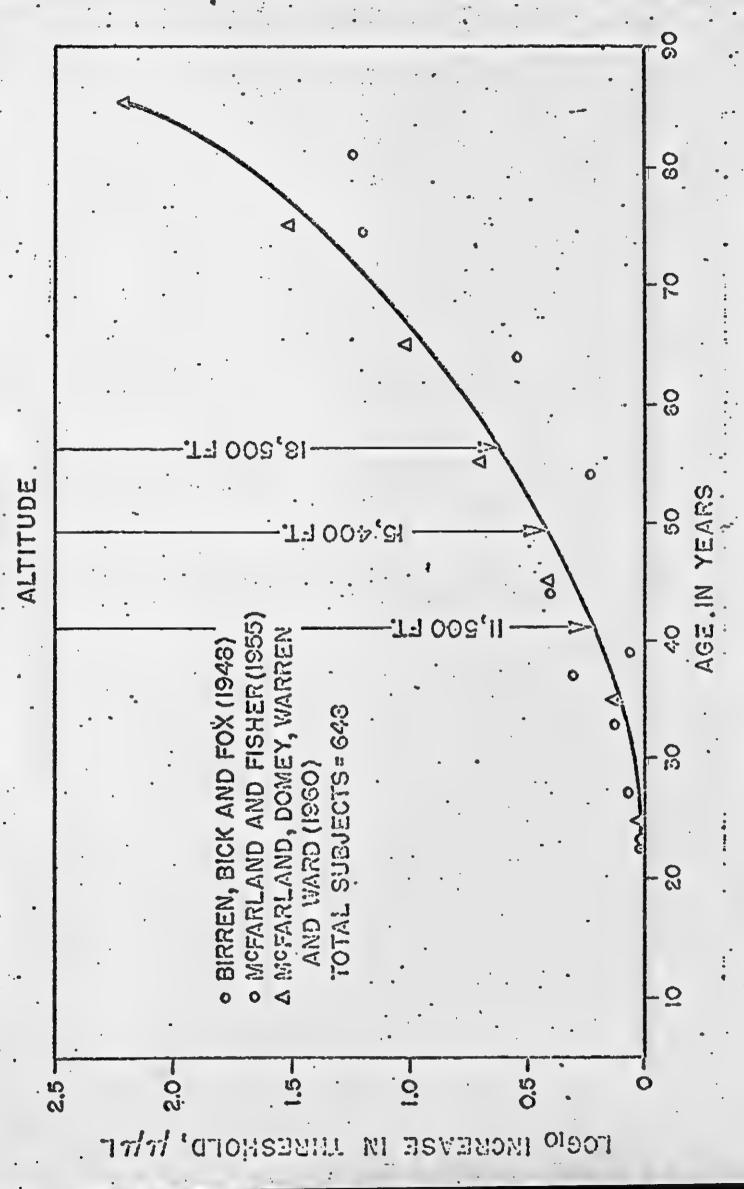


Figure 4. The effect of progressive degrees of oxygen deprivation on foveal differential brightness sensitivity at a constant field intensity is shown in the upper figure (A). In the control experiment (B) the oxygen tension was not altered. (McFarland, Halperin, and Niven, 1944)



The iriluence of age on dark adaptation, shown in relation to average values for the influence of altitude on dark adaptation. (McTarland, 1963) Figure 5.

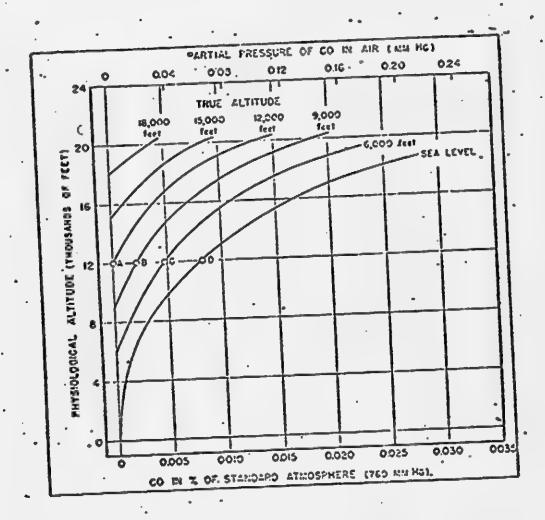


Figure 7. Physiologic altitude is shown as a function of the amount of carbon monoxide in the air at various true (pressure) altitudes when equilibrium with the blood has been reached. (McFarland, Roughton, Halperin, and Niven, 1944)

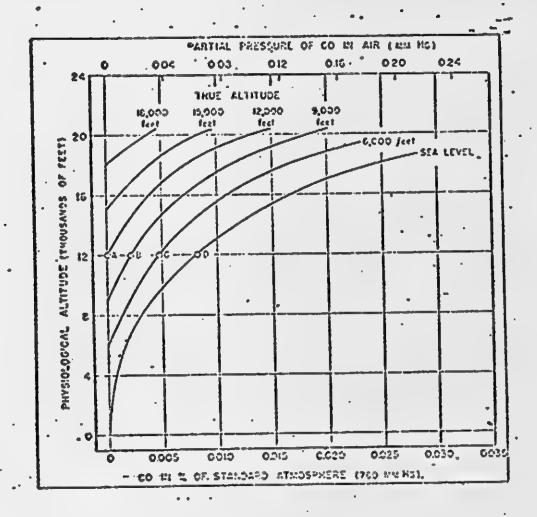


Figure 7. Physiologic altitude is shown as a function of the amount of carbon monoxide in the air at various true (pressure) altitudes when equilibrium with the blood has been reached. (McFarland, Roughton, Halperin, and Niven, 1944)

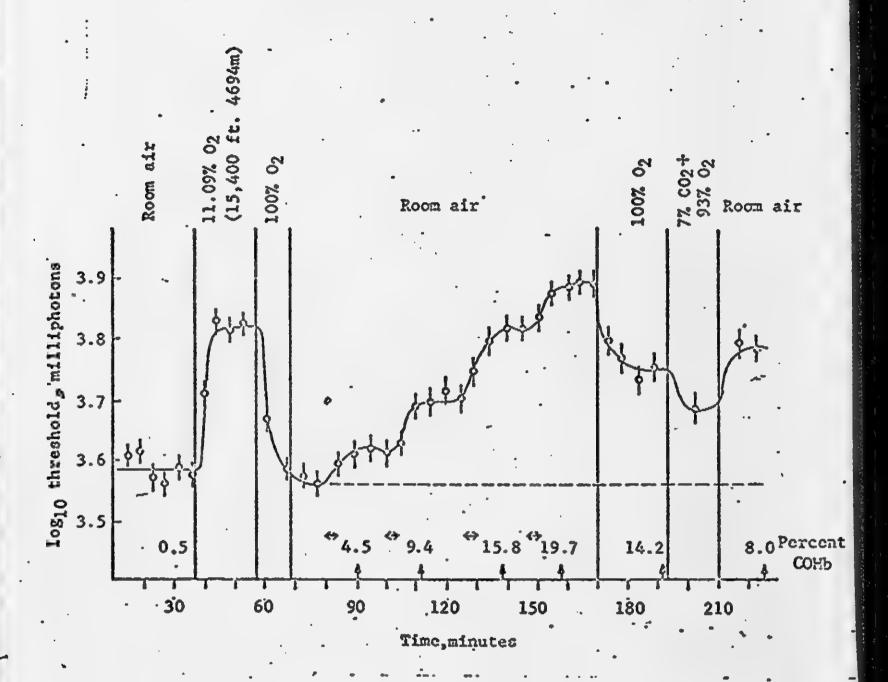
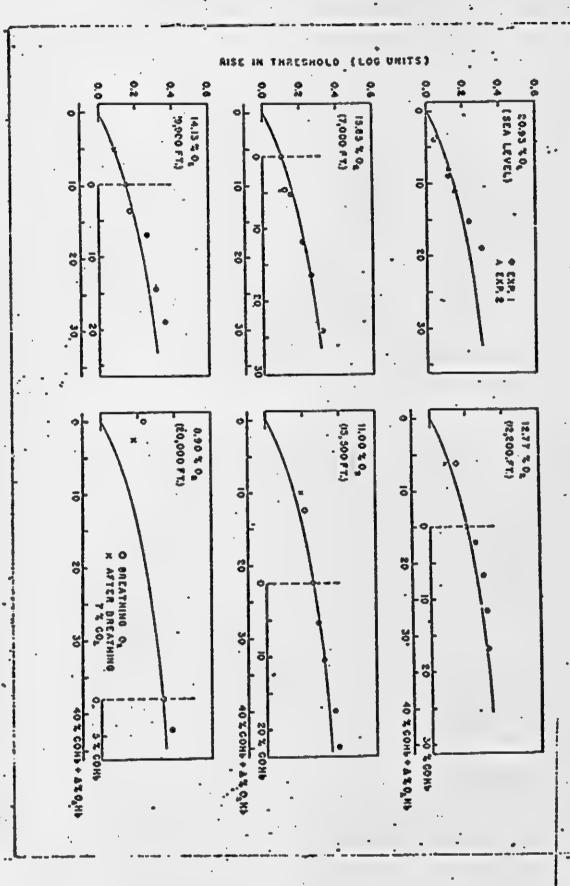


Figure 8. The effect of progressive increases of blood COHb on visual threshold, and of oxygen and carbogen in counteracting this effect. (Halperin, McFarland, Niven, and Roughton, 1959)



altitudes on visual threshold. (Halperin, McFarland, Niven, and Roughton, Figure 9. 1959). The influence of various amounts of carbon monoxide at increasing

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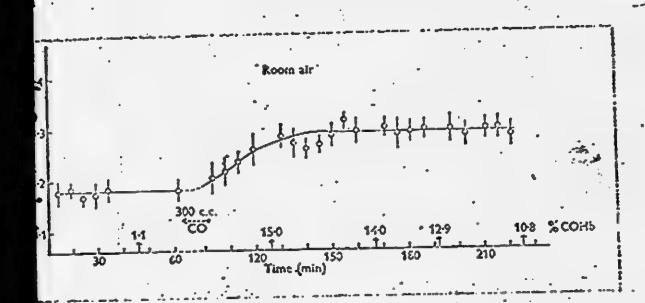


Figure 10. Prolonged effects of carbon monoxide on visual thresholds, showing lack of improvement despite gradual loss of CO from the blood. (Halperin, McFarland, Niven, and Roughton, 1959)

The Association Between Smoking and Accidents: Overdependency as an Influencing Variable

JAMES RAY ADAMS AND E. BELVIN WILLIAMS

Dr. Adams is Associate Director for Research, Safety Research and Education Project, Teachers College, Columbia University. He attended Louisiana State University and Columbia University where he received his Ph.D. degree. He served as files and research psychologist with the United States Air Force and joined the Safety Research and Education Project as a Research Associate in 1962. His work there is concerned principally with problems of driver judgment, driver rehabilitation, and drinking and smoking by drivers. He is a member of the American Psychological Association, American Association for the Advancement of Science, end other professional organizations.

Dr. Williams, Assistant, Professor in Psychology and Education, received his B.S. Lagres in Psychology from Denser University in 1955, his M.A. in Clinical Psychology from Textlers College, Columbia University, in 1957, and his Ph.D. in Clinical Psychology from Columbia University in 1952. In 1953 he served as councilor and lecturer at Columbia University. He is fresently Director of the Computer Center at Teachers College, Columbia University.

ARB smokers more likely to have accidents than nonsmokers? An affirmative answer to this question is suggested by several lines of reasoning. The corapelling evidence of the association between smoking and a growing list of diseases (Advisory Coremittee to the Surgeon General) suggests a mosophistic or self-destructive bent of personality in those who continue smoking. Mony believe that such a personality that underlies accident involvement. The incidence of accidental first started by smokers would also support an explanation involving a "death-wish" in the makeup of the tmoker. (It is interesting to redesting the notion of a death-wish was proposed by Signand Merri who himself in derivent a long sques

A Colory Reseased and III realism Forder, Two their Collins. Colorable II is easily, 1777. The followy Removale and Revenders Forder sortives existing high supplies for explosionately musical end only production for Africa Forder Forder. ende a endergrand betrette de same a servició de la completa de servició de servició de servició de la completa de servició de la completa de servició de la completa de servició de servició de la completa de servició de servició de la completa de servició de la completa de servició de la completa del la completa de la completa de la completa de la completa de la completa de la completa de la completa del a completa

of operations for cancer of the mouth brought on by smoking.)

It has been suggested also that smoking, like thumb-sucking, is a regressive oral behavior related to the infant's pleasure at sucking the breast or bottle. It has been found that thumb-sucking in child-hood was more common among men who continued to smoke (McArthur, et al., 1958). The oral character hypothesis is pertinent to our inquiry into this point in that, first, drinking alcohol and smoking are both oral behaviors; and second, the trait of over-dependency is a characteristic of the "oral personality."

An alternative emphasis "may suggest itself" by noting the resemblance between nicotine and alcohol as habit-forming drugs. The association between alcohol use and traffic accidents is well documented. The resemblances between the traits which have been found characteristic of the alcoholic and the accident repeater—particularly the trait of overdependency—are evident in the research literature. Might there not be an association between nicotine use and accidents similar to that between alcohol use and

accidents—if on a smaller scale?

A CORRELATION BETWEEN SMOKING AND TRAFFIC ACCIDENTS

To test the hypothesis that smeling is associated with higher traffic accident rates, we had the cooperation of a group of insurance companies and were collecting data on the standardination of a psychometric instrument (Williams and Malfetti, 1985). The data included information on the driving accident and violation records of 1,025 male insurance applicants between the ages of eighteen and twenty-five. Most of these young men were either in high school or college. Included among the questions in the biographical section was one asking whether they smoked.

On the basis of their accident and violation records, the subjects were divided into three accident-violation groups: a low group which had no accidents or violations at all, a high group which had had their driving licenses suspended or revoked, and a median group which had accidents and/or violations on their records, but not enough for suspension or revocation of license. The total-sample was divided randomly into two subsamples of equal size to see whether results in one subsample would be confirmed by results in the second minutes; it is the second minu

tive of the general driving population, or the smoking population, generalizations beyond the group represented must be guarded.)

. When the three accident-violation groups were compared as to proportions of smokers in each, the following resulted:

In subsample a (N=513):

No accident-violation group
18.6 smoked
Median accident-violation group
22.9 smoked
High accident-violation group
54.3 smoked

The statistic chi-square was computed for these differences and showed that in less than one sample out of 100 would a difference of this size occur by chance.

In subsample 2 (N=512) the figures were:

No accident-violation group 15.9 smoked Median accident-violation group 25.8 smoked High accident-violation group 37.5 smoked

.Chi-square here was stable at the .025 level of statistical significance.

In other words, in subsample I there were three times as many smokers in the high accident-violation group as in the low group, and this is confirmed in subsample 2 where there were over twice as many. Acknowledging that correlation does not demonstrate causation, what can be made of this association?

DISCUSSION

It might be argued that a higher accident-violation rate on the part of smokers need have no implications whatever for personality factors of accident-repeating drivers. The smoking act itself can lead to accidents because of the distraction of lighting a cigarette, handling it, or fishing around for a dropped cigarette (and possibly through the effects of carbon monoxide in the smoke). This is true, and some accidents do start off this way—but that is not the point at issue. The significant point is that the driver can know in advance that smoking can be a distraction, and he still chooses to enche while he is driving. It is here at the stage of deciding or not deciding that personality enters in. Personality for the stage of deciding or not deciding that personality

TRAFFIC QUARTERLY The masochistic personality hypothesis would explain the association between accidents and smoking thus: smoking is damaging to health and it correlates with accidents because both the smoking and the accidents are manifestations of an underlying impulse of self-destructiveness. It seems that while this may sometimes be the case, there are several arguments against it as a neces-

First, the practice of smoking began before people were aware of the harm it does, so it is not reasonable to ascribe smoking only to masochistic motives. Second, smoking, as well as alcohol and calleine, are pleasurable at the time of use; enjoyment of pleasure does not fit in with self-punishment tendencies. Third, smoking as a habit usually begins in the individual because of social pressure and is continued because it becomes habitual. There is no need for a concept of self-destructiveness to explain this.

In sociong an alternative to the self-destructiveness hypothesis in explaining the association of smolding with accidents, we may consider a certain aspect of the use of such drugs as nicotine, alcohol, and casseine. These drugs are used for their psychopharmecological effects—they are stimulants or tranquilities. The habitual smoker or drinker has come to depend on an agent external to himself—that is, the ding—to attain a desired psychological state. "Psychogenic dependence is the common denominator of all drug habits" (Advisory Committee to the Surgeon General, p. 351). A drug habit, then, is a form of dependency, and heavy reliance on drugs may be indicative of overdependency.

OVERDEPENDANCY AND ACCEPTAINS

The everdependency hypothesis finds some support in the fact that overdependency is jutilized to the definition of neurodicism, said the evidence on the smelling-neurolivien syndrome has been summing rized in this way (Advisory Committee to the Surgeon Gen-

Despite the individual deficiencies of sorms of the studies, Comite the grent Cheshy in renognus Bration and percentional tackeds med, and dupite Certain Cherepanel is in reported Cadings, the patience alterna comparathe legal consequence and the relative country, regularity of the legal regions to the entirence of an interesting between the same ingligible that of so earlies configuration that is vagoely described as neverthe.

How would overdependency be related to accidents? Consider the general opinion that a sense of responsibility is a crucial attitude of the safety-conscious person. What do we mean by responsibility? Responsibility implies this: I will rely on myself and take action to avoid or prevent accidents.

The unsafe person, then, is irresponsible; but "irresponsible" is a negative term—it says what he is not. If a person is not responsible, what is he? Is he not everdependent? The responsible person says, "I will take care of myself." The overdependent person says, "I want to be taken care of."

The association between smolding and traffic accidents may be best explained by recognizing that both are manifestations of over-dependency in the personality makeup of the accident repeater.

When we note that smokers are very likely to use alcohol (Matarazzo and Sorlov, 1980), might this not suggest that the higher rate of smoking associated with high accident-violation drivers indicates simply that smokers are more likely to have accidents because of alcohol intoxication? Our data do not relate to this notion, but it is a plausible hypothesis. It does not however, contradict the overdependency applanation, since excessive drinking like excessive smoking is indicative of everdependency.

What is gained by considering the overdependency hypothesis as an explanation of the relationship between smoking and driving when the concept is so vague and general? There are two possible advantages. The trait of overdependency, being one aspect of the oral character concept, is more specific than this concept, and it is more pertinent to accident propensity than the month-contend-habits aspect of the oral character concept. Secondly, while everdependency is not antithetical to reladent receive tendencies (see sechion is probably associated with overdependency), an emphasis on overdependency makes the implication that subdirectiveness alone may not suffice in some cases as an explanation of actitiont proposity or of smoking behavior.

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Eyes - Care

This research for this article done by Dr. Wm. R. Baldwin Indiana University, Bloomington, Indiana June 1962

The Ocular and Visual Effects of Tobacco

No specific ocular disease has been directly attributed to the use of tobacco except Tobacco Amblyopia, and there is much evidence that while smoking is involved in the ethology, its role is more properly described by considering it as a contributing factor. Tobacco smoke and smoking do affect coular tissues and visual physiology so as to occasionally be clinically significant. These effects could be expected to operate through the following reactions:

- 1. Irritation of tissues directly exposed to tobacco smoke.
- 2. Changes in the retinal and ciliary blood vessels, and changes in the heart itself.
- 3. Irritation of the accessory sinuses.
- 4. Degeneration of neural colls.

Direct Exposure

Tobacco snoke produces hyperchia, cellular edama, and increased sensitivity of the conjunctive and lid margins. This is transient if exposure is
only occasional but may become relatively permanent if exposure is consistent.

There is also some evidence that at least those persons who wear contact least
are more likely to develop corneal edama if they smoke or remain in a smoke congested atmosphere for several bours.

The result of the irritating effect of tobacco smoke on conjunctive and lid margins is to produce wild complaints of irritation, lacrimation, and concurration the vascular injection. Taken together these can be considered sub-clinical in nature. There is some possibility however that these chronic reactions of the conjunctiva, lid margins, and perhaps even the corner make these structures now

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susceptible to disease caused by microorganisms and by other noxious agents.

Cardiovascular Effects

Smoking causes constriction of peripheral blood vessels during smoking. The change induced is approximately that induced by changing temperature from 83° F to 66° F. Permanent effects are suggested in some few cases wherein thrombangiitis obliterans develops. Almost all such instances occur in chronic smokers, are improved by withdrawal, and regress or recur when tobacco is used again. It might be presumed that construction of the retinal vessels also results from smoking. Recent research suggests that the vasoconstriction is mediated by the sympathetic vascmotor fibers and not by humoral agents such as epinophrine or posterior pituitary bormone. Therefore, the retinal and corebral vesselt may not be effected in the same way. Another recent study demonstrated that angioscotoma are increased in size following the inhalation of certain amounts of cigarette smoke. The most plausible explanation for this is vasodilation. A Third study reported no effect on ratinal vessels in most subjects, constriction of retinal arteries in a few instances and dilation in a few. There is no reported evidence that smoking has any significant effect on the retinal or ciliary muscles capasithy individuals. The literature does report, however, higher incidence of complication in glaucoma and in arteriosclerotic retinopathy among smokers than among non-snokers.

Bocause there is vasoconstriction of paripheral vessels, blood pressure increases during smoking. The degree of this increase is not significant ocularly unless retinal or ciliary arteries are already damaged. This represents another example of how smoking may, in rare instances, act to complicate an existing confident or may act as the exciting cause. The heart rate increases during smoking and to some degree may be permanently increased in consistent smokers. This may be the direct reflex reaction to peripheral vasoconstriction, in which case there would be no conceivable ocular effect. But two other possibilities exist. There is some evidence that there is constriction of coronary arteries caused by release of posterior pituitary hermone during smoking. Nicotine may also affect the cardiac ganglion or (and this is most likely) directly affect the netabolism of cardiac muscle. Any of these factors reduce the ability of the heart to compensate and would serve to complicate any primary retihal condition which tended to produce retinal ischemia.

Smoking is probably never the essential cause of vascular eye disease. It nay, however, complicate existing pathology of retinal vessels, ciliary vessels, and planeons.

Sinusitis

Tobacco smoke acts as an irritant to the epithelium comprising mucous membrane. Chronic irritation especially of the sphenoidal and ethmoidal sinuses reduces eye manifestations. Smoking is rarely the primary cause of sinus infection: ut may more often have complicity in the extension of the effects of the disease hich was caused by bacterial infection or some other eticlogical agent.

Chronic decrocystitis and catarrhal conjunctivitis are the only common ocular anifestations of infection of the accessory sinuses. In rare instances choroi-itis or optic neuritis may be secondary to sinusitus. Tobacco smoking does not ause ocular disease through affecting the sinuses, however, when sinusitus does evelop, abotinence from smoking is indicated in order to help avoid complications.

Neural Degeneration

Tobacco Amblyopia was first described as a disease entity in 1792. During near century an increasing number of cases was reported and the incidence as considered to be quite high. It is now estimated that somewhat less than the per cent of all persons with eye disease display amblyopia in which tobacco implicated as part of the cause. The eye effects are generally associated ith systemic micetime interdection in which there are also gastrointestinal isorders and symptoms. Blood borne micetime probably does not produce optic muritis directly but acts indirectly in association with some other conditions.

The eye effects are generally associated in a sociation with some other conditions.

The eye effects are generally associated in which there are also gastrointestinal into a sociated particular directly but acts indirectly in association with some other conditions.

The eye effects are generally associated in which tobacco patients in a sociation with some other conditions.

The eye effects are generally associated with or decurring the entity of the entity in associated with or decurring the acquired nearsh syphilis have also been reported as concurrent conditions.

The eye effects are generally associated with or decurring the entity in associated with entit

A typical case of tobacco amblyopia involves a male between the age of forty had sixty years who has been a heavy pipe or eiger smoker for many years. He may lso complain of insomnia, loss of appetite, constipation fatigue, mental depression, tremors.

There are usually no ophthalmoscopic clues to the condition although it has seen reported that retinal arteries are of smaller caliber. The visual symptoms are usually bilateral, but there is some evidence that the left eye is affected earlier and more soverely. The patient usually complains of visual acuity loss at distance first, and is likely to report that vision is better at night. Visual field studies show that the papillomocular bundle of nerve fibers is affected.

page five

The characteristic field change is in the form of a relative central or caeco-central scotoma first for green then for red, followed by blue and finally form.

Acuity seldom deteriorates below 20/100.

The primary site of the nerve atrophy may be in the retina or in the optic nerve. Treatment consists of abstinence from the use of tobacco or alcohol. Strychnine, vasodilating nitrates, and vitamin B (principally N¹²) are also employed.

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Prepared By

OFFICE OF THE SURGEON CONTINENTAL DIVISION, MATS KELLY AFF, TEXAS

coury or seeing is a preant requirement for the pison, in its fallest interpretamines the degree of personal t an individual can make avironment and to this end one's calculated survival

t those happenings, which cern for survival, stem from le situations not seen, or if ly interpreted. Every seried and properly motivated ld reflect over the fact that its defense, his family's series depend primarily on y of seeing. So why don't every one of you visit your geon more frequently to inself that your visual capability perly evaluated?

know you have a minor rection, you can more conld capably compromise with traction. People who are cough to have physical exla frequently to determine a not organic discuss such desis, cancer, diabetes, etc.

may be present in the early stages, practically never die because of these distances.

Enforced annual physical examinations and a pilot's attitude of official compliance is not an effective approach to the situation. False visual interpretations may have resulted in more deaths to scores of pilots than all other causes put together—to say nothing about accidents involving loss of property and personal disabilities.

Pilots continue to accept peorly illuminated cockpits, wherein if their vision were perfect there is not sufficient inherent lighting in panel boards to interpret vital instrumentation. It has been repeatedly noted while riding in aircraft where, in night time rain and storm conditions, the pilot lights controls with one hand and uses a fifty cent flashlight in the other to see what information his instruments are trying to give him in order to whip the natural problems at hand.

No surgeon could be convinced that his operating table environment was safe if ligiding were so poor that in order to carry on with an operation it was necessary for an assistant to—augment inherent lighting facilities by holding a fifty cent flashlight in the surgeon to pinpoint and evaluate vital areas of interest.

The following remarks are to remind pilots that a little will power will eliminate physiological restrictions inimical to flying safety, incolar as night vision is concerned.

Normally night vision efficiency at 5,000-8,000 feet altitude is roughly one-half as good as it is on the ground.

A half dozen eigarettes impair your ground level night vision efficiency comparable to the 8,000 feet chitude. You now logically can see how much a half dozen eigarettes would further decrease your night vision efficiency when smoked, while flying at 8,000 feet — so why jeopardize safety through wilfully handicapping your vision.

One might substitute a connection with the oxygen tank to a cigarette holder (in lieu of a cigarette) and puff oxygen rather than a cigarette. You would at least be helpful rather than handicapping yourself.

Flyer

G

HIPPENS STREET

Why An Air Line Pilot. Quit Smoking

He Found The Most Striking Reasons Right In His Own Backyard — Flying

By Capt. Robert N. Buck, TWA

(Reprinted from July, 1955, READER'S DIGEST)

ing for a living is tough on you rally. In my job of flying to see and the Near East I can miss nights' sleep in one week, go gh seven hours of time change, inner at breakfast time, bunch at and generally give my system a time. Yet I have to take three all examinations a year, and if one of them—except for minor rectable reasons—my career as an he pilot is finished. This dark always floats somewhere in a sky; it's his biggest in-ceurity. So are health-conscious, take care musclyes better than mest people

the years ago I was addicted to ing cigarettes, and I brooded it. My pulse was a little faster it should have been. It was fine that first morning cigarette, but that was lighted—acoun! Later burn would singe my insides—that followed the cigarettes too. o stop . . . ah.

to one day I was in the instruoverhaul shop of our company of to the foreman. We were disa gyros, used in important blindinstruments. One type, air-driven are little cup-edged wheels that in a stream of air which comes inside the airplane cabin; strong on brings it into the gyro instru-

ou know," the foremen told me, in we take these instruments apart werhaul, our biggest problem is abacco tars."

on mean," I asked, "the cabin air get in these gyros had that much from smoking by the passengers crew?"

hat's right."
seemed incredible, but it was true,
by filters curtail the problem. But
not time tobacco for built up to
delicate parts of the instruments
than extent that there were takes
like it actuary stopped the gyrou!
I airplane parts are mechanical or
level after so many fight hours,
tyros used to work about 500

the major consideration in their service life being tobacco-tar accumulation! Now planes are coming off production lines, with electrically driven gyros, some in hermetically scaled cases which keep out air—and tobacco tar.

I began to wonder: If that air in the cabin polluted the insides of the instruments, how about my insides? It helped to convince me that I ought to quit smoking.

Stopping wasn't fun. I suffered all the torments, particularly in moments of tension. One day I was coming in with a low ceiling and the rain falling hard; it was, as we say, a tight approach. At such times you concentrate fiercely, you're really all in it, and then suddenly you're ent the ground and it's finished. When I got out of the airplane I wanted a cigarette, no feeling. But I held out. Now, after years of not smoking, the desire is over—well, almost over. I have never regretted my decision.

After quitting I kept careful tabs on the results. I checked with a physician friend, Dr. Emerson Day of the Cornell Medical College. Yes, my heart slowed to a pleasant walk, my flaming stomach disappeared, food tasted better. The effects were interesting; I wanted to know more about them. There's lots of information, but I found the most striking things right in my own back yard—the flying world.

Two Major Effects Smoking has two major effects, one from nicotine and one from carbon monoxide. The carbon monoxide part is of particular interest to pilots because it cuts down altitude tolerance. The toxic effect, through action in the biend, produces an oxygen deficiency, like being at high aldfude. Dr. Ross McFarland, author of Human Factors in Air Transportation-a standard relcrence on aviation medical matters-says that if you are a pack-a-day smoleor you are living at an abitude of elout 6010 feet. If you are flying, you add the mading altitude to your actual altimate.

Cercorn sefendets made tem en :

determine how much altitudy they could take on days they smoke at all. The result; a 4000- to 5000-foot difference in favor of not smoking.

Visual Limitations

Research has indicated too the smoking hurts your "dark adaptability"—your ability to see in the dark, are to change from light to dark. Take is important to pilots. We wish we could look out into the night and see like a cat. Motorists driving a car at night should remember this effect of exparettes.

Nicotine apparently raises the body's oxygen requirement 10 to 15 per cent. That affects both night vision and the depth perception that enables a pilot to judge his height above the ground and bring the plane to a smooth landing.

In a test of 900 airmen—450 sonsnokers and 450 snokers—the infuence of smoking on heart action voclearly indicated. The smokers are aged a higher resting pulse rate that non-smokers; their pulse rate that more and their blood pressure some higher with moderate exercise. Their recovery to normal after exercise was slower.

Affects Ferique

Tests have also been made with
flight crews to check fatigue. Count
have been observed on long figure
when they smoked one to two pace
a day; then, on return figure with
similar hours, when they did not stoll
The result: the crews felt much
thing I especially noticed after I got
smoking. Long night flights used
really knock me out, exhaust me.
I'm just normally thed.

Recently I made a flight from No.
York to Paris to Cairo with an entire
non-smoking crew. We all remark to
about how fresh the cockpit air was
how our eyes didn't burn in the lattired hours. We began to list the cock
members we know who have story a
smoking. The number surprised
flight crews are getting the weed.

So airplones and smoking area's friendly terms. The U.S. Navy will its fliers recently in the Naval delete Safety Reviews "The pilot who will to fly at optimum efficiency and will try to reduce his sample, will try to reduce his sample, will before flights and most before night flights."

The propin of the sic been in that smoking is but for then of crown, if smoking the third there that lower continues and

il bound volum

EXHIBIT M

The following materials are incorporated into the records of this petition by reference or are included as part of this Exhibit M:

- 1. Articles relating to the hazards of carbon monexide which is present in cigarette smoke at 42,000 part per million.
 - a. Halperin, McFarland, Nevin & Roughton, the Time Course of the Effects of Carbon Monoxide on Visual Thresholds, 145 Journal of Physiology (No. 3) p. 583 (1959) (articles included).
 - b. McFarland, Roughton, Halperin & Nevin,
 The Effect of CO₂ and Altitude on Visual
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 (1944) (article included).
 - Quanteties of Carbon Monoxide on Vision.

 Presented to Conference on Biological Effects of Carbon Monoxide, New York Academy of Sciences, New York, January 14, 1970 (article included).
- 2. Articles on the general hazards created by tobacco smoke as it relates to accidents and vision.
 - a. Buck, Why an Airline Pilot Quit Smoking, Reader's Digest, July 1956 (article included).
 - b. Office of the Surgeon, Continental Division, Military Air Transport Service, Vision, MATS Flyer (May, 1958) (article included).
 - C. Baldwin, Oculor and Visual Effects of Tobacco, June, 1962 (article included).
 - d. Adams & Williams, The Association Between Smoking and Accidents: Overdependency as an Influencing Variable, Traffic Quarterly (article included).

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- i. Waller, Julian I., High Accident Risk Among Middle-Aged Drivers and Pedestrians, Geriatrics, December, 1966.

EXHIBIT 5

1618 Curtis Creek Road Quincy, Illinois 62301 March 7, 1970

Federal Aviation Commission Washington, D. C.

Gentlemen:

Please pass and enforce a regulation to require no smoking on all carriers--planes, trains and buses. When we know that the smoke from all digarettes and digars and pipes is harmful to those who must inhale it, it would seem important to require that people not have to suffer from it who do not wish to. Time after time I have had a headache from inhaling smoke or have had a meal spiled because someone lit a digarette or digar or pipe and blew the distasteful smoke odor into the air. It is time that smokers who have no consideration for non-smokers be required to refrain from smoking in public carriers or be confined to one section of the conveyance, partitioned so that non-smokers will not have to be offended.

The drive that has been started to prohibit smoking on public carriers, go forward and the prohibition made an enforced regulation.

Sincerely,

. Mar garet Tid I Fleeneau

Margaret Todd Fleeman (Mrs. Richard)

Hall 3 06 PH 70

Defice we developed three seeds



FEDERAL TRADE COMMISSION
RECEIVED
FEB 1 6 1970
BUREAU OF DECEPTIVE
PRACTICES

January 28, 1970

Federal Trade Commission Washington, D.C.

Dear Sir,

It seems incredible after the Eurgeon General's Peport of 1964 that digarette smoking would still be allowed in public conveyances. Flying Pelta Airlines from "iemi to San Francisco on January 5th of this year, I was made so uncomfortable by smoking passengers around me that I had to request oxygen. To get it I had to send the head stewardess to the captain three times. After the tank was empty, rather than go through the same time-consuming procedure, I took my book and spent the rest of the flight in the toilet room for the only clean air on the plane. Why should the health of all the passengers be jeopardized by the minority of inconsiderate digarette smokers?

Yours' truly,

Louise Clerk

Mrs. Johnson Clark 6 Blackthorn Foad

Lafayette, Calif. 94549

FEB 8 1970

JOHN R. WESTINE, D.D.S., M.S.

RECEIVED FLA.

ORAL SURGERY

FEB 25 1970

PAUL G. ROGERS, M.C.

Honorable Paul Rogers 205 Worth Avenue Palm Beach, Florida

Dear Sir:

Yesterday, February 19, I flew Delta's Flight #95 from Chicago to Fort Lauderdale, and was made acutely aware of the air pollution problem which exists within commercial aircraft.

Previously, I have related my dissatisfaction to airline management; however, since they have lacked the courage to show leadership in prohibiting smoking, I am writing to you in the hope that you might tack on an amendment to one of the many anti-pollution bills being introduced in the House.

Ocviously smoking is harmful to the individual, and causes discomfort to most passengers.

The AMA, the ADA, HEW, The American Cancer Society, The American Heart Association, all condemn smoking, so this is not an unreasonable request.

Good luck. In the meantime, I will be supporting your efforts 100 percent.

Singerery,

JRM:NA February 20, 1970 CC Eastern

Delta Northwest Orient John R. Westine, D.D.S., M.S.

THE PERLITE CORPORATION

and the profession with the contract of the co

EPHONE (215) 494-1422

February 23, 1970

Federal Aviation Agency Washington, D. C.

Subject: Smoking on Commercial Air Lines

Gentlemen:

. In my business I have to travel long distances and it is absolutely imperative that I travel by air. After these planes are in flight the cabin is filled with eigerette smoke which I find most objectionable, and I now believe that it is injurious to my health to be trapped in this small space and to be forced to breathe this polluted air.

I request that the FAA make a ruling against smoking on any scheduled flight.

Would you please send me any information that you may have available to the public to inform me as to how I can best present my case on this subject. Could you inform me what others are currently doing in this regard.

Very truly yours,

THE PERLITE CORPORATION

Mirelock John B. Murdock

President

JBM: 1kb

MRS. BARGER G. NIX, JR. 6 LONGMEADOW ROAD WINNETKA. ILLINOIS 60093 Pebruary 22, 1970 __.

Ur. Edward C. Hodson Chief Regulations Staff Flight, Standords Service Foderal Aviation Administration Washington, D. C. (2088)

Dear Mr. Hodson:

have of those who are desperate about the smoking situation to airplanes. For a woman, I travel quite frequently, and have been so often "trapped" in a cloud of smoke, both eightette in eight (though I had always thought the latter "forbidden"--retso). I happen to have a very bad sinus condition, and the seffect of smoke being blown on me or around no is to make my breathing passage close right up plus making me feel very hauseons. This, plus the muisance of having to make a complete change of clothes upon arrival because of the strong ofer of smoke clinging to my garments, I feel enfringes on my rights.

Trealize that the bulk of travellers is business men, who offer the most "repeat" business to the airlines; but sign! they be able to dictate the conditions of airplane travel in every way to the enclusion of the rest of us?

dere to hope that this might be a most opportunative to strike a blow against the pollution-filled interiors of airplanes. A need an Unbudaman to represent the non-ambling multitudes on airplanes, to protest our rights. I am hoping your office will come in that capacity. I multilize to know aryone class I could write to get help in this matter; so well.

Yeary thouly

man B 21 mil

NALD A. VORUM

sulting Chemical Engineer

CHEMISTS' CLUB BUILDING \$2 EAST 4127 STREET NEW YORK, N. Y. 10017 (212) OR 9-0075-OR 9-0000

00958

February 19, 1970

Mr. John H. Shaffer, Administrator Federal Aviation Administration Washington, D. C.

Subject: Smoking in Airplanes

Dear Sir:

I am writing to add my voice to that of Chief Justice Burger and numerous others re. smoking in airplanes. It really is an imposition, particularly now, as I'm sure that some of the newer jets don't have the ventilating systems of some of the older planes. The air gets pretty blue. Even the U. S. Navy had more consideration for its men, at least in World War II. Smoking was confined to certain times and places, and not just because of safety. The rules applied to landlocked barracks as well as to shipboard. I believe that you could do at least as well for currently helpless "fellow travelers."

Speaking of safety, a practice of some captains in turning off the "No Smoking" sign while at the end of a runway waiting their turn to take off is really bad. The engines are idling then, and the air already reeks of unburned kerosene. Mixing this with lighted cigarettes isn't even good judgement, to say nothing of consideration.

Thank you in advance for some serious consideration, I am

-Yours very truly,

Donald A. Vorum

Dionald a. Working

DAV:RCK

CC: Chief Justice W. Burger

RECEIVED

FEE 24 1 22 PM 773

* DAVID GITLIN, M. D.

PRACTICE UNITED TO ALLERGY

WESTGATE MEDICAL ARTS CENTER

20800 WESTGATE

FAIRVIEW PARK, ONIO 44126

PHONE 331-2003"

February 22, 1970

Federal Aviation Administration Washington, D.C.

Gentlemen:

This letter refers to the problem of smoking on airplanes. It is my contention that this practice is unsafe and unhealthy because it subjects a large number of nonsmokers, many of them sick or potentially sick to excessive doses of carbon monoxide. These doses of carbon monoxide are imposed on a captive audience of nonsmokers who have a right to be protected from such dangers.

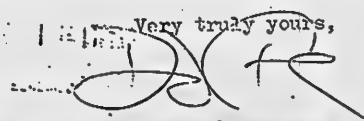
It is established by recent research on the matter by the Division of Air Pollution of HEW that a level of 10 - 15 ppm of carbon monoxide will after about 8 hours, result in a level of carbonyhemoglobin in the blood of a normal healthy person of about 2 - 2.5%. This is a level which is considered dangerous.

It is apparent that people already sick will reach this level sooner because they breathe more rapidly. It is also apparent that such people may have adverse effects at levels of carboxyhemoglobin below 2 - 2.5% because the many people with borderline cardiac anoxia due to coronary artery disease have no margin of safety with respect to carboxyhemoglobin.

Recent literature (enclosed) reports that smoke filled rooms may reach levels of carbon monoxide as high as 25 - 50 ppm. These are levels well above limits that are established even for normal people.

Even aside from the question of effects of smoking on nonsmoking sick and healthy passengers is the problem of heart attacks occuring in pilots who are flying at the time of their attack. Such attacks are not infrequent. Such attacks could be triggered by smoking on the part of the pilot or exposure to smoke of the pilot.

Therefor I am asking you whether you agree that in the interests of public health and safety all smoking on airplanes should be discontinued at an early date.



814 Audubon Ro.
East Lansing, Michigan
March 13, 1970 - 48823

PRESIDENT,
FEDERAL AVIATION ADMINISTRATION
WASHINGTON, D.C.

ACTION: Mr. Rudolph, FS-1: INFO: Mr. Moore, OP-1 3/17/70

DEAR SIR:

RECENTLY I READ AN ARTICLE IN THE CHRISTIAN SCIENCE MONITOR REGARDING THE AIRLINES INTEREST IN PROVIDING A SEATING ARRANGEMENT IN THE NEW JETS FOR SHOKERS AND NON-SHOKERS. ALL I CAN SAY IS "HUGRAY, AT LAST!"

LAST AUTUUN BY TWO CHILDREN AND I FLEW TO LOS ANGELES TO VISIT BY PARENTS. BY THE TIME WE ARRIVED WE HAD RED, "WATERY EYES AND SHELLED LIKE A TAVERN. IT CERTAINLY SEEMS TO ME FOR ALL THE BONEY ONE PAYS TO USE THIS TYPE OF TRAVEL YOU WOULD CERTAINLY HAVE SOUE "SAY" ABOUT THE "TREATMENT" YOU RECEIVE. ISN'T THAT WHAT ALL BUSINESSES ARE BASED ON...SERVICE? NOW ALL THE AIRLINES (THE MAJOR OMES) PROVIDE FINE, QUALITY SERVICE AND TONDERFUL MEALS, ETC....BUT WHAT GOOD DOES THAT DO IF YOU SPEND THE ENTIRE TRIP IN DISCOMFORT OVER SOMEONE MEAR YOU BLOTTING SMOKE IN YOUR FACE! AND BEING A NON-EMOKEM, THE CHOLE SWELL AND ATMOSPHERE REPELLS ME. I ALSO EXPERIENCED NAUSEA (ALONG WITH ONE OF MY CHILDREN) DUE TO THE EXTREME SMOKE-FILLED CABIN. SO THANK GOO THAT THE FAA IS FINALLY WAKING UP TO THE PLIGHT OF US NON-SMOKERS...AND YOU'D BE SHOCKED AT HOW MANY THERE ARE! BEFORE LONG WE DIGHT NOT BE THE MINORITY!

THANK YOU FOR ALL AND ANY EFFORTS TAKEN IN THIS DIRECTION.

BINCERELY YOURS

MRS. SHARON MICHUTT

ELECTIVES

£1264

Res 17 g Living 2 19 th 10



W.J. Voir hugged coap.

Subsidiary of AMERICAN MACHINE & FOUNDRY COMPANY
3801 South Harbor Boulevard, Santa Ank. California 714-546-4220

ACTION: Mr. Rudolph, FS-1v 2-17-70

Feb. 12, 1970

Mr. John H. Shaffer Federal Aviation Administration Washington, D.C.

Dear Mr. Shaffer:

With the tremendous emphasis on ecology these days, I thought it appropriate to express my opinion concerning the environment within commercial aircraft. My last few commercial airline flights (and I do fly a considerable amount) have been reminiscent of the worst Los Angeles smog alerts on record (I am a native Southern Californian so I do know what I am talking about).

Why should an individual, as a full paying passenger, be obligated to sit through a four-hour swoke congested, respiratory-restricted flight? It is morally, socially and perhaps legally wrong to usurp an individual of his right to breathe clean, fresh air.

Hoping that the "friendly skies of United" and all other commercial airlines will soon be clean, I remain

Sincerely yours,

M.G. Amsbry

Product Manager - Water Sports

MGA/1g

RESERVED

FES 17 10 55 AN 770

00843

EXHIBIT 6

DEPARTMENT OF Transfertation

Federal Aviation Administration 14 CFR Parts 121, 123, 127, 135 1 [Dockets Nos. 10012, 10033; Motice 70-14] Moking on aircraft operated BY AIR CARRIERS, AIR TRAVEL CLUBS, AND COMMERCIAL OPERA-TORS

Advance Notice of Proposed Rule Making

The Federal Aviation Administration considering the need to further regue the smoking of cigaretos, cigars, and pes by persons in the passenger comrtment of aircraft operated by air riers, air travel clubs, and commerperators. This action would involve kending Parts 131, 123, 127, and 135 of e Federal Aviation Regulations.

This advance notice of proposed rule king is being issued in accordance with FAA's policy for the early institution public proceedings in actions related tule making. An "advance" notice is ged when it is found that the resources the FAA and reasonable inquiry oute of the FAA do not yield a sufficient is to identify and select a tentative ese or alternate courses of action, or ere it would be helpful to invite public dicipation in the identification and ction of a course or alternative areas of action with respect to a par-iar rule making problem. The subject iter of this notice involves a situation stemplated by that policy.

nterested persons are invited to parnote in the making of the proposed e by submuting such written data, es, or arguments as they may desire. nmunications should identify the platory docket or notice number and submitted in duplicate to the Fed-Aviation Administration, Office of General Counsel, Attention: Rules 🗱 et, GC-24. 805 Independence Avenue Washington, D.C. 29559. All comnications received on or before to 23, 1970, will be considered by the ninistrator before taking action upon proposed rule. All comments will be Lable, both before and efter the closdate for comments, in the Rules eket for examination by interested sons. If it is determined to be in the to interest to proceed further, after sideration of the available data and ments received in response to this ce, a netice of proposed rule making be issued.

z a petition filed on December 12. (supplemented by additional docuis submitted on Dec. 24, 1959, and on 14, 1970), the FAA was recogsted to ot a rule that would ban the sinoking izarettes, cigara, and pipes on all easer corrying flights. The politioner ried that the requested rule is reed because (1) the lighted climettes.

cigars or pipes create an imminent and serious threat of fire or fire-induced. smoke in the aircraft; (2) the tobacco smoke is deleterious to the health of the passoners; (3) should be an annotance and discomfort to, and discrimination against, the nonsmoking passengers; and (4) smoking by flight crewmembers during operations presents a possible distraction and imminent danger es the result of an ashtray fire, a vayward ash, smoke itself, or other smoking related possi-

In support of his assertion concerning the hazard of fire, petitioner refers to the TWA B-707 Are incident on October 27, 1963; to the Piedment B-727/Cessna 310 mid-air collision accident at Hendersonville, M.C., on July 19, 1987; to the UAL Viscount accident near Parrotsville, Tenn., on July 9, 1954; and to certain extracts from the CAB hearing transcript (for this UAL Viscount accident), in which other fire incidents are mentioned. In support of his assertion concerning hight crewmember effectiveness, petitioner refers to 2 report, titled "Chronic Exposure to Low Levels of Carbon Monoxide on Human Mealth, Behavior, and Performance," issued during 1963 by a special committee of the National Research Council.

In support of his assertion that tobacco smoke is a health hazard to passengers, petitioner refers to the Report of the Advisory Committee to the Surgeon General of the Public Health Service contained in a 19\$4 "Report on Emeking and Health," that made certain findings with respect to the health hazards of cigarette smoking, and to 1960 and 1960 Supplements to the 1967 "Public Health Service Review of the Mealth Consequences of Smoking." Petitioner also refers, in this connection, to the following articles from the medical literature:

Cameron, P.: "The Presence of Pets and Smoking as Correlates of Perceived Disease," Journal of Allergy 40 (December 1937).

Cameron, P., et al.: "The Health of Smokers' and Non-mokers' Children," Jour-

nal of Allerry 43 (June 1969).
Fullmer, C. D., et al.: "Sputum of Chronic Cigarette Smokers," Rocky Mountain Medical Journal CS (January 1989).

"Nontmoliera Share Careinogenia Risk While Breathing Air Among Smokers," Medical Tribune (Dec. 4, 1967).

"Science Magazine," Editorial (December "Deutsche Medizinische Wochenscharft,"

Volume 92 (November 1967). "Smoking and Realth, Summary of a Report of the Royal College of Paymeinns of London on Smoking in Relation to Cancer of the Lung and Other Diseases" (London,

II. Octtel, "Cancer Research and Fight Against Cancer," Illed Book, 6th Conference of the Cerman Cancer Society in Derlin, from Moreh 10th to 14th, 1951.

H. Oettol, "Smoking and Health," Nichrichten aus Chemie und Technik 11 (1963),

Journal of Medicien Rheinland-Pfair 18 (1955) 217.

H. Orstel, "Toxic Materials in the Air, Water and Food" (Short essay in monthly course of Instruction for gottons (2007)

written aller a speech of the laters "call! Congress Lymposium of the deep of he works and Badestern on Merch 6th and 8th 2007. National Howith Survey, June, 1947

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Capita, "The Alicryic Asthusialet 4.90%. "Laryngoscope," Angust, 1963 issue, article by Dr. J. J. Bailinger.

. Zussman, "Atopic Symptoms Caused by Tobacco Hypercensiditity," 61 Southern Dick-

iest Journal 1175 (1993).

Speer, "Toducco and the Merchicker," 16 Archives of Environmental Meanth 443 (1939).

P. E. Hausel, "Clinical Atlangs" (1968).

Vaugh & Binch, "Practice of Allengy"

(1954).

Sherman & Kessler, "Allergy in Pediatric

Practice" (1957).
Arthur Coca, M.D., "The Pulse Text." Chapter 8.

With respect to the second and third assortions listed above, another petition filed on December 17, 1968, to accest a rule requiring all domestic air carriers to effectively segregate smoking passengers from nonsmoking passengers, asserts that unregulated eighrette smoking on airlines creates a clear and present danger to the safety, health, and ince of **people with allergies or other precaistin :** medical problems; a significant nealth hazard for all nonsmoking passengers who are thereby forced to inhale the smoke created by other passengers; and a severe annoyance for many nonanoliing passengers, thereby infringing on their rights and deterring many from flying, and possibly deterring courteous smokers from enjoying their flights.

In addition to these patitions, the FAA has received numerous letters from other interested persons regarding untoking aboard sireraft, each of which has been acknowledged and filed with the rulemaking docket of one of the petitions mentioned above.

On the question whether smoking cre-, ates a fire (or fire-induced smoke: hazard in aircraft, the FAA has concluded Cafter examining the matter submitted: that there is no significant hazard of this nature associated with smoking catransport aircraft, as presently requlated. Under current rules, smolting is prohibited during takeon and landing. Current fire-resistance standards for interior materials (such as seen upholstory. Soor covering, drapasica, wall panels, etc.) ensure that they are not easily ignited by smokers and that. if ignited, they are self-extinguishing and slow-burning. In any event, if a fire should occur, it would be small. easily detected, and readuly extinguished by the crew using the hand fire exunguishers prescribed by current of tulations. The presence of exygen dispers ing equipment is not a significant i cour. Oxygen is dispensed to all occurrents only in the rare instance of cabin feater urization at high altitude and, even them, in small quantities relative to the essuavolume. When crygen is dispensed, smalling is prohibited.

Referring specifically to the clied TWA B-TOT indicent, the FAA considers it to be no more than conjecture that the fire well caused by a digarette, cigar, or pape Wish.

(As published in the Federal Pegister 35 F.R. 50457 on March 25, 1970)

-1-

t to the cited Picdment P-727/ 310 and UAL Viscount accidents, wil Acronaulies Board Report in stance, and the National Transion Safety Doard Report in the did not contain a finding that ag by passengers or crowmembers to probable cause.

ton 601 of the Federal Aviation 1052 (49 U.S.C. 1421) in pertinent withouses the Administrator to te safety of flight of civil aircraft commerce by prescribing such able rules as he may find necessary nce adequately therefor. The PAA ers this sectutory authority adeto prescribe rules to protect nonng persons on beard aircraft epby air carriers, oir travel clubs. emmercial operators, from the hazards which may arise from exto tobacco snicke caused by others smoke on the aircraft. However, aking on the grounds of annogance escomfort to, and discrimination L nonstaking passengers may not tiled vacor the existing statutory ipeel the Administrator.

PAA considers that the matter god in the netitions (and by others) his an in-depth exploration of the hazard question as related to nonno passengers. The PAA is issuing tvance notice of proposed rule makobtain wider public participation undertaking formal rule making, her other relevant againments, datu, and evidence, and to give other interested persons an opportunity to put forward alternatives to the courses of action urged by the petitioners. The PAA solicits the views of air travellers, aircraft operators, crewmembers, aircraft manufacturers, medical and technical expects, and other interested persons, on the following questions:

(1) On the basis of the listed medical articles referred to by the petitioners and other available data, is exposure to to-baceo smoke, in concentrations likely to occur in transport aircraft (assuming normal ventilation rates), so injurious to the health of nonsmoking passengers as to justify rule making that would require separating smokers from nonsmokers in the passenger compartment, or other relief mentioned in question (2) below? Is there any other medical evidence bearing on this question?

(2) If relief should be provided for nonsmoking passengers, would it be practicable to provide it on aircraft in service (including propeller-driven airplanes):

(a) By separating smokers from nonsmokers in the passenger compartment? Could smokers be confined to the rear of the passenger compartment, or to one side, to adequately reduce the nonsmoker's exposure to tobacco smoke? Would a movable partition be feasible?

(b) By increasing the ventilation rate in the passenger compartment, or by improving the filtering, or by both?

(c) By any other means (short of prohibiting smoking entirely)?

In this connection, it should be added that FAA's altworthings standards for transport category aircraft and normal entegory rotorerest contain specific rules on passenger and crew compartment rentilation, Also, the PAA and the Depertment of Realth, Education, and Welfare have entered in > 2 joint study to measure the emounts of tobacco smolic contaminents in air transport aireraft, using Nights carrying military personnel and dependents as a "test ber for the study. In addition to measuring the emounts of impurities in both cockpit and passenger cabin areas, the researchers will gather data on the numbers of smokers and non-mokers aboard fights, personal attitudes toward sawking and amount and type of tebacco used by smokers. Also, technicians will check the efficiency of existing air circulation systems being operated in the transport planes.

This advance notice of proposed role making is issued under the authority of sections 313(a) and 601 of the Federal Aviation Act of 1952 (49 U.S.C. 1354(a), 1421), and section 6(c) of the Department of Transportation Act (49 U.S.C. 1655(c)).

Issued in Washington, D.C., on March 19, 1970.

James F. Rupoles. Director, Flight Standards Service.

IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF COLUMBIA

RALPH NADER,

IRIS CLARK INGRAM,

DORIS LIMONCELLI,

MRS. HIRAM E. NEWBILL, and

HENRIETTA R. WALKER,

Plaintiffs,

v.

PEDERAL AVIATION ADMINISTRATION

and

HONORABLE JOHN H. SHAFFER, Administrator, Federal Aviation Administration

Defendants.

No.

MOTION FOR PRELIMINARY INJUNCTION

Pursuant to Rule 65 of the Federal Rules of Civil Procedure, plaintiffs, by their counsel, respectfully move this Court to issue a preliminary order enjoining defendants from failing or refusing to immediately ban smoking of cigars, cigarettes and pipes on all passenger carrying commercial aircraft including rotorcraft.

The bases for this Motion are outlined in the attached Monorandum of Points and Authorities.

Respectfully submitted,

Anthony Z. Roisman
Berlin, Roisman and Kessler
1910 N Street, N. W.
Washington, D. C. 20036

Counsel for Plaintiffs

AVAILABLE

al bound volume

UNITED STATES DISTRICT COURT FOR THE DISTRICT OF COLUMBIA

RALPH NADER, et al.,

Plaintiffs.

V.

FEDERAL AVIATION ADMINISTRATION and HONORABLE JOHN H. SHAFER, Administrator, Federal Aviation Administration,

Defendants.

Civil Action No. 1535-70

DEFENDANTS' MOTION TO DISMISS AND FOR SUPPARY JUDGMENT; AND OPPOSITION TO PLAINTIFFS' MOTION FOR FRELIMINARY INJUNCTION

Defendents by their attorney, the United States Attorney for the District of Columbia, hereby respectfully --

- 1. Move the Court to dismiss the action and, alternatively, for summary judgment on the ground that there is no issue as to any material fact, and defendant Shaffer is entitled to judgment as a matter of law.
- 2. Move the Court to dismiss the action as to defendant Federal Aviation Administration for lack of jurisdiction, in that the FAA is not a suable juristic entity, and the doctrine of sovereign immunity burs suit as to the United States of America.
- . 3. Oppose plaintiffs' motion for preliminary injunction.

Incorporated herein and made a part hereof are the following Government exhibits (identified as indicated):

Government Exhibit No.

Description

1

Affidavit executed by James F.
Rudolph, Director, Flight
Standards Scrvice, Federal
Aviation Administration
(together with "Advance Notice of
Proposed Rule Making".

Government Exhibit No.

Description

2

Petition filed by Ralph Nader in FAA Docket No. 10012, entitled "Petition Requesting Immediate Enactment of a Rule Abolishing the Smoking of Cigars, Cigarettes and Pipes on Passenger Carrying flights of Civil Aircraft Including Rotor-craft," and FAA acknowledgment of receipt thereof.

Letter from petitioner Nader's counsel enclosing additional documents for the record in FAA Docket No. 10012 (attachments thereto appear with the complaint in this action).

"Petition to Intervene" filed in FAA Docket No. 10012 (including affidavits) and FAA acknowledgment of receipt thereof.

In support hereof, a Statement of Material Facts and Hemorandum of Points and Authorities is submitted.

/s/ THOMAS A. FLANNERY United States Attorney

Joseph M. HANSON Assistant United States Attorney

/s/ GIL ZHEMERMAN Assistant United States Attorney

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that service of the foregoing Defendants' Motion to Dismiss and for Summary Judgment and Opposition to Plaintiffs' Motion for Preliminary Injunction, Statement of Material Facts, supporting memorandum of points and authorities, and affidavit of James F. Rudolph has been made upon plaintiffs by mailing a copy thereof to Anthony 2. Roisman, Esq., 1910 N Street, N.W., Washington, D.C. 20036, on this Zek day of June, 1970.

/s/ GIL Zicharian Assistant United States Attorney

UNITED STATES DISTRICT COURT FOR THE DISTRICT OF COLUMBIA

RALPH NADER, et al.,

Plaintiffs,

V.

FEDERAL AVIATION ADMINISTRATION and HOMORABLE JOHN H. SHAFER, Administrator, Federal Aviation Administration,

Defendants.

Civil Action No. 1535-70

DEFENDANTS STATEMENT OF MATERIAL FACTS

(Assuming that this matter is judicially reviewable at all) this litigation presents solely this question of law: Whether defendant Administrator, Federal Aviation Administration ("FAA"), acted arbitrarily or capriciously in exercising the emergency power conferred upon him by 49 U.S.C. § 1485(a), Proviso Cne, by determining that no such emergency was presented as would warrant issuance of an emergency regulation immediately banning all smoking of cigars, cigarettes and pipes on civil aviation passenger-carrying flights.

Although there are here no factual issues triable by the Court, we present -- for the Court's convenience and in general conformity with Local Rule 9(h) -- the following Statement of the Material Facts:

The Material Facts

- 1. Plaintiff Nader on December 8, 1969 filed a petition with the FAA Administrator (assigned Docket No. 10012) requesting that the Administrator issue an immediate rule banning the smoking of cigars, cigarettes and pipes on all passenger-carrying air flights.
- 2. Four individuals sought to join in this petition. They were permitted to intervene as interested parties.

- 3. The FAA Administrator (acting by his delegate), taking into account the points made in the petition and all other relevant data, and applying the FAA's expertise in respect of the matter, determined that no such emergency requiring immediate action in respect of air commerce existed as to warrant invocation of the suspension suthority vested in the FAA Administrator by 49 U.S.C. § 1485(a), Proviso One. Incorporated herein by reference is the statement of the reasons supporting this determination, set forth in the affidavit of James F. Rudolph, Director, FAA Flight Standards Service, (Government Ex. 1) and the "Advance: Notice of Proposed Rule Making" ammed thereto.
- 4. On March 25, 1970 the FAA Administrator (acting by his delegate) issued this "Advance: Notice of Proposed Rule Making" instituting an "in depth exploration" by the FAA of the proposed ban on spoking in civil aircraft, insofar as the passengers are concerned.
- 5. The FAA Administrator (acting by his delegates) has under current study the further question whether rule-making proceedings should be initiated relative to smoking by crew personnel of passenger-carrying aircraft in civil eviation.

/s/ THOMAS A. FLANNERY United States Attorney

/s/ JOSEPH H. HARNOH Assistant United States Attorney

/s/ GIL ZIAMLRIAN Assistant United States Attorney UNITED STATES DISTRICT COURT FOR THE DISTRICT OF COLUMBIA

RALPH NADER,
IRIS CLARK INGRAM,
DORIS LIMONCELLI,
MRS. HIRAM E. NEWBILL,
HENRIETTA R. WALKER,

Plaintiffs

CIVIL ACTION NO. 1535-70

FEDERAL AVIATION ADMINISTRATION

and

HONORABLE JOHN H. SHAFFER, Administrator, Federal Aviation Administration

Defendants.

AFFIDAVIT OF JAMES F. RUDOLPH

City of Washington) ss District of Columbia)

JAMES F. RUDOLPH, being first duly sworn, deposes and says:

- 1. I am assigned as Director, Flight Standards Service, Federal Aviation Administration ("FAA"), Department of Transportation.
- 2. On 8 December 1969, Ralph Nader filed a Petition for Rule Making with the FAA requesting that the Administrator exercise his emergency power under 49 U.S.C. 1485 by banning smoking of pipes, cigars and cigarettes on passenger-carrying aircraft. In this Petition, Mr. Nader stated that this exercise of the Administrator's emergency power is required because of alleged imminent and serious threat of (1) fire in the plane; (2) deleterious health effects upon the passenger; and (3) annoyance and discomfort to the passengers.
- 3. On 24 December 1969, Iris Clark Ingram, Doris Limoncelli,
 Mrs. Hiram E. Newbill and Henrietta R. Walker filed a Petition to Intervene
 in support of Mr. Nader's original Petition.
- 4. By letter dated 12 January 1970, Mr. Nader's attorney stated as an additional reason for the exercise of the Administrator's emergency power that safety hazards result from smoking by flight crewmembers during operations; by letter dated 10 March 1970 Mr. Nader's attorney submitted additional materials and references for docketing with Mr. Nader's Petition.

Government Exhibit No.

215

- 5. Upon consideration of all of the information presented in support of Mr. Nader's petition and all information otherwise available, the Deputy

 Administrator determined that an emergency in respect to safety in air commerce did not exist requiring issuance of an emergency rule under the First Proviso to 49 USC 1485, and that the proper course under the circumstances was to issue en Advance Notice of Proposed Rule Making, to consider the points raised in Mr. Nader's petition, along with another petition concerned with the subject of smoking in passenger-carrying aircraft. In part, the bases for this conclusion appear at pages 5, 6 and 7 in the Advance Notice of Proposed Rule Making (annexed as Exhibit "A" to this affidavit). Additional FAA views supporting this determination are:
- (a) Millions of miles have been flown over many years without passenger smoking creating a safety problem;
- (b) Meaningful assessment of the magnitude of the possible safety hazard created by passenger smoking must await completion of more extensive scientific inquiry into this problem, specifically considering the environment within a passenger-carrying sirplane;
- demonstrating that the presence of the toxic substances contained in tobacco smoke in the crew compartment, or the smoking of cigarettes by members of the crew, can cause a decrease in night vision, sensitivity, reaction time, judgment or decision-making capabilities, to a degree that the high level of safety required in the public interest for passenger-carrying aircraft would be so reduced as to constitute a hazard to air safety (while there is some evidence that pilots who smoke cigarettes with deep inhalation may experience some decrease in night vision sensitivity [rod vision], pilots in civil swistion do not depend upon high night vision sensitivity for safe operation; they work with brightly-lighted instrument panels, runways, and anti-collision lights);
- (d) Tobacco-smoking in aircraft passenger cabins does not prevent compliance with FAA ventilation standards set forth in 14 CFR 25.831 and 29.831, in that any concentration of tobacco-smoke is greatly reduced when mixed with ventilation air, for example, a typical fully-occupied cabin, with half the passengers smoking, would contain a carbon monoxide concentration of less than 5 parts per million ("ppm") which is considerably less than the 50 ppm concentration limit established by the FAA.

d bound volu

- 6. The Advance Notice of Proposed Rule Making (Exhibit "A") was published in the Federal Register on 25 March 1970, 35 F.R. 5045.
- 7. The matter whether any possible safety hazard is created by smoking by members of the flight crew, is presently under FAA study to determine whether any rule-making action is required in that regard.

James F. Rudolph Parel Sold

Notary Public

Subscribed to and sworn before me this 320 day of

___1970.

SEAL

My commission expires School 14 1972.

RALPH HADER,

IRIS CLARK INGRAM,

DORIS LIMONCELLI,

MRS. HIRAM E. NEWBILL, and

HENRIETTA R. WALKUR,

Plaintiffs,

bruincries

PEDERAL AVIATION ADMINISTRATION

ARID

HOMORABLE JOHN H. SHAFFER, Administrator, Federal Aviation Administration,

Defendants.

No. 1535-70

June 26, 19.70 Bobent Mr. Storms, Clock

ORDER

This matter having come before this Court for hearing on Plaintiffs' Motion for Preliminary Injunction and Defendants' Motions to Dismiss and for Summary Judgment it is this _____ day of June, 1970 ORDERED:

- 1. Defendants' Motion to Bismiss is denied.
- 2. Defendants' Motion for Surmary Judgment and Plaintiffs' Motion for Preliminary Injunction are postponed for further hearing and decision until August 17, 1970.
- 3. This case is remanded to the Federal Aviation
 Administration and Defendant, Administrator is directed to
 file with this Court, within 30 days, a full complete statement of the reasons, both factual and legal, for his refusal
 to order an emergency ban on smoking on all passenger
 carrying civil aircraft (including retorcraft) and all
 materials considered by the Administration in reaching his
 factual determinations.

Date: June 36, 1970 James, Joseph C Hassy

UNITED STATES DISTRICT COURT FOR THE DISTRICT OF COLUMBIA

RALPH NADER, et al.,

Plaintiffs,

Civil Action No. 1535-70

YEDERAL AVIATION ADMINISTRATION, et al.,

Defendants.

DEFENDANTS'
SUPPLEMENT TO MOTION
TO DISHISS AND FOR SUPMARY JUDGMENT,
AND TO OPPOSITION TO PLAINTIPFS'
MOTION FOR PRELIMINARY INJUNCTION

Defendants by their attorney, the United States Attorney for the District of Columbia, in supplementation of their motion to dismiss and for summary judgment, and of their opposition to plaintiffs' motion for preliminary injunction, and, as required by the Court's direction contained in its order of June 26, 1970, hereby file the annexed statement (marked "Government Exhibit No. 5") of the Administrator, Federal Aviation Administration ("FAA"), setting forth in full the FAA's reasons for demying plaintiffs' petition for issuance of an emergency rule under the First Proviso to 49 U.S.C. §1485, banning smoking on all passenger-carrying civil aircraft.

For the reasons set forth in the original motion and opposition, and in this supplement, the Court should now dismiss the action and deny plaintiffs' motion for preliminary injunction.

/s/ THOMAS A. FLANNERY United States Attorney

JOSEPH M. HAMMON Assistant United States Attorney

/s/ GIL ZIMMLRMAN Assistant United States Attorney

CERTIFICATE OF SERVICE

HEREBY CERTIFY that service of the foregoing defendants' supplement to their motion and opposition has been made upon plaintiffs by causing a copy thereof to be hand-delivered to their attorney, Anthony 2. Roisman, Esq., 1910 N Street, N.W., Washington, D. C. 20036, on this 7th day of August.

/s/ GIL ZIMMERMAN Assistant United States Attorney UNITED STATES OF AMERICA
FEDERAL AVIATION ADMINISTRATION
DEPARTMENT OF TRANSPORTATION
WASHINGTON, D. C.

RALPH NADER, et al.

for issuance of an emergency rule under 49 U.S.C. 1485 immediately banning the smoking of cigars, cigarettes and pipes on passenger-carrying air flights.

Regulatory Docket No. 10012

Statement of Reasons for Determination of No Emergency

Petitioners seek the issuance of an emergency rule immediately banning the smoking of cigars, cigarettes and pipes on all passenger-carrying air flights, under the First Proviso to 49 U.S.C. 1485(a). That statutory provision confers authority upon the Federal Aviation Administrator, when he wis of the opinion that an emergency requiring immediate action exists in respect of safety in air commerce," to immediately enter an emergency rule -- without notice, hearing, or report -- if he reasonably deems that action to be essential in the interest of safety in air commerce to meet such emergency."

The original petition herein was filed on 12 December 1969 by Ralph Nader. It was supplemented on 24 December 1969 by petitioner/intervenors Iris Clark Ingram, Doris Limoncelli, Mrs. Hiram Neubill and Henrietta R. Walker. On 14 January 1970 it was supplemented by a letter from petitioner Nader's attorney.

Petitioners asserted that emergency rule making is required as a matter of safety and comfort to passengers on air flights because:

- (1) Lighted cigarettes, cigars, and pipes create an imminent and serious threat of fire or fire-induced smoke in the aircraft;
 - (2) Tobacco smoke is deleterious to the health of the passengers;
- (3) Smoking is an annoyance and discomfort to, and discrimination against, the nonsmoking passengers; and
- (4) Smoking by flight crowmembers during operations presents a possible distraction and imminent danger as the result of an ashtray fire, a wayward ash, smoke itself, or other smoking-related possibilities.

Government Exhibit No. 5

Upon consideration of all of the information presented in support of the petition, and all information otherwise available, the Deputy Administrator determined that no emergency existed in respect of safety in air commerce such as to require issuance of an emergency rule under the First Proviso to 49 U.S.C. 1485(a). He further determined that the proper course for the Federal Aviation Administration ("FAA") to take, in light of the available information and application of the FAA expertise in the matter, was to issue an Advance Notice of Proposed Rule Making ("ANPRM") to consider the points regarding the possible safety hazard created by passenger-smoking raised by this petition, and another petition concerned with the subject of smoking in passenger-carrying aircraft. Petitioners sought court review. Nader, et al. v. Federal Aviation Administration, et al., U.S.D.C. D.C. No. 1535-70. By order entered 26 June 1970, the District Court directed the Federal Aviation Administrator to file with the courts "a full and complete statement of the reasons, both factual and legal," supporting the Deputy Administrator's action.

In response to the Court's Order, I set out here the reasons, both legal and factual, for the determination that no emergency requiring immediate action existed in this matter, in respect of safety in air commerce, such as to warrant issuance of an emergency rule. This determination was made in the light of the FAA expertise, which has been developed over its many years of experience in regulating the design, manufacture and operation of passenger-carrying aircraft. Moreover, the material now contained in the Regulatory Docket submitted in response to the ANPRM supports this determination.

Legal Considerations

The emergency authority vested in the Administrator by the <u>First Proviso</u> to 49 U.S.C. 1485(a) is stringent in its terms. In my view, it may be invoked only with care, under conditions indicating the existence of an emergency actually calling for immediate FAA action, deemed to be essential in the interest of air safety, in order to meet such emergency. Where a situation has prevailed for many years, without any indication of its having any seriously adverse effects on air safety, it simply cannot be deemed an emergency requiring immediate action within the meaning of this <u>First Proviso</u>.

The Administrator's authority under the <u>First Proviso</u> extends to issuance of an emergency rule without notice, hearing, or the making or filing of any report. A determination not to invoke this emergency provision does not affect the FAA's undertaking to conduct in-depth studies and evaluations, and then to schedule a matter for ordinary rule-making proceedings.

Moreover, the Administrator may not invoke his stringent authority under the First Proviso to ban smoking on an emergency basis on the ground of annoyance and discomfort to non-smoking passengers. It is the FAA's view that there is no authority under the FA Act to take this action even on a non-emergency

basis. Section 601 of the act (49 U.S.C. 1421), in pertinent part, authorizes the Administrator to regulate the conduct of individuals aboard civil aircraft in air commerce in the interest of air safety. Matters simply of annoyance and discomfort to nonsmoking passengers are not deemed to relate safety in air commerce.

Pactual and Other Operative Considerations

Applying these legal considerations, the determination of no emergency was based on the following factual and other operative factors:

(1) Lighted cigarettes, cigars or pipes do not create a serious or imminent threat of fire or fire-induced smoke aboard passenger-carrying commercial aircraft.

Examination by FAA experts of the service record of passenger-carrying commercial aircraft, including the record cited in the present petition, revealed no evidence of a hazard of this nature associated with smoking on these aircraft, as presently regulated. Millions of miles have been flown over many years without passenger smoking creating a safety problem. There has never been an accident attributable to smoking by passengers. No incident reports on record indicated that the fires that did occur in flight were caused by passenger smoking.

The FAA technical experts pointed out that: Smoking is not permitted during fueling at the rump because of the possibility of fuel fumes entering the aircraft during the fueling process, and fuel spillage around the aircraft. Smoking is not permitted on take-off or landing because if an aircraft were to crash the fuel lines or tanks might be ruptured and fuel or fumes might be ignited in and around the aircraft. There is no need for such precautions during en route flight, since there is enough time available, should a crash landing become necessary, to extinguish the cigarettes; cigars, or pipes. En route there is no danger of a cigarette igniting fuel or fuel fumes during the flight since the fuel lines in the aircraft are well isolated from the passenger compartment. In the event of an en route mid-air collision with another aircraft, the banning of passenger smoking would not measurably reduce the probability of an in-flight fire. Nor is there a realistic possibility of an in-flight fire due to a passenger's or crew member's cigarette igniting fuel from fuel lines or tanks ruptured by violent turbulence.

Relying on the expert knowledge and many years of experience of the FAA technical experts in regulating the design, manufacture and operation of passenger-carrying aircraft, it was clear that before structural damage to such an aircraft resulting from severe turbulence could result in fuel escaping into the crew or passenger compartment, the damage to the aircraft would already have resulted in a loss of control of the aircraft sufficient for the flight crew to declare an emergency and light the no smoking sign. Furthermore, it is customary for airlines to light the no smoking sign when heavy turbulence is encountered, as a matter of passenger comfort.

The FAA technical experts further pointed out that: Current fire-resistance standards for interior cabin materials (such as seat upholstery, floor covering, draperies, wall panels, etc.) ensure that they are not easily ignited by smokers and that, if ignited, they are slow-burning and self-extinguishing. In any event, if a fire should occur from smoking, it would be small, easily detected, and readily extinguished by the crew using the hand fire extinguishers prescribed by the current regulations. A cigarette coal dropped (or placed) on cabin carpet material currently in use would produce a very slow combustion with no active burning. On coated fabrics, side walls, ceiling, draperies, and partitions, the material would melt away from the coal but combustion would stop when the material was no longer in contact with the coal.

As for the CAB Accident Report relative to the UAL Viscount Accident near Parrottsville, Tennessee, on 9 July 1964, cited by petitioners, that report states only that the probable cause of the accident was an "uncontrollable in-flight fire of undetermined origin in the fuselage." Of the kinds of combustibles that might have been involved in this fire (reports the CAB on page 12) only kerosene, hydraulic fluid, and lighter fluid were known to be aboard the aircraft. Of these (the CAB continues) only kerosene and hydraulic fluid were known to be aboard "in sufficient quantity to produce the fire experienced." In the opinion of the FAA experts, passenger smoking was not a contributing factor in that accident. Ordinary lighter fluid was not on board in a sufficient quantity to have caused the fire experienced. The kerosene and hydraulic fluid were isolated from the passenger and crew compartments and, therefore, could not have been ignited by a cigarette.

In this connection as the FAA experts noted: Portable hand fire extinguishers (H₂O and CO₂) are conveniently located throughout the aircraft and are readily available for immediate use in the event a fire occurs from any source. Each compartment where smoking is permitted is equipped with self-contained removable ashtrays. Further, each receptable for towels, paper or waste must be at least fire resistant and must have a means for containing possible fires. Smoke emitted before the fire is extinguished would be dumped overboard from the passenger compartment within 2-3 minutes during flight and in half this time from the crew compartment, and after the fire is extinguished smoke would no longer be emitted.

As for the cabin fire incident cited by petitioners, which occurred on TWA Flight 703, a Boeing 707-331B, on 27 October 1963, the source of ignition in that case has never been determined. Petitioners' assumption that a lighted cigarette started the fire has apparently been taken from a news account of the incident. The FAA experts advised that analysis found no evidence that a lighted cigarette was involved. There was no statement by the cabin attendants that a passenger was smoking or might have been smoking. The need for emergency evacuation was determined by the standard procedure to evacuate passengers upon the occurrence of any emergency while the airplane is on the ground. The smoke was not promptly cleared because the ventilating system ceased to operate when power was cut off and the engines shut down in preparation for emergency evacuation of the airplane. In flight the cabin air is completely changed approximately each three minutes, and had the incident

occurred in flight, there would have been little, if any, effect from the smoke because it would have been discharged overboard as rapidly as it was generated.

The FAA has a continuing program to improve the probability of occupant survival in an airplane accident. As a consequence of the FAA's concern over the hazard of a cabin interior fire in transport airplanes, the FAA has undertaken successive upgrading of the airworthiness standards which specify the resistance to burning required of cabin interior materials, when permitted by advancing technology and practicability. In this connection it is noted that the FAA amended its airworthiness rules in September 1967, because it agreed that continual upgrading of the standards for fire protection of compartment interiors is necessary to make the maximum possible use of the best interior materials as they become commercially available and to encourage the development of such materials. In light of this approach, current FAA regulations require that material used in each compartment occupied by the crew or passengers be selfextinguishing or fire resistant as the case may be. This material includes interior wall panels, interior ceiling panels, draperies, structural cover transparencies in panel form, and coated fabric insulation covering which must be self-extinguishing after flame removal when tested in accordance with Appendix F of Part 25 of the Federal Aviation Regulations.

Amendment 25-15 to Part 25, adopted 20 September 1967, and made applicable to all in-service transport airplanes by Amendment 121-30, also adopted 20 September 1967, specifies flammability limits for all cabin interior materials except wire insulation and small parts that are enclosed or behind upholstery. The minimum flame temperature required to produce ignition in upholstery. The minimum flame temperature with these standards is 1550°F, testing materials to determine compliance with these standards is 1550°F, produced by a flame at least 1 1/2 inches high emanating from a 3/8-inch diameter tube. Winder and Hoffman, in their reference text, "Tobacco and diameter tube. Winder and Hoffman, in their reference text, "Tobacco and 1700°F (900°C) and 2190°F (1200°C), with a drop of 210°F (100°C) to 300°F (150°C) during static burning (without puffing or a forced draft). Any fire caused by a burning cigarette coal would be of the type already described, i.e., slow burning and easily extinguished.

In support of this Federal Aviation Administration policy of continual upgrading of the standards for fire protection of compartment interiors, Government and industry development programs were established to find ways to increase passenger and crew survivability through improvements in interior materials. As a result of these development programs, materials are now available for use in crew and passenger compartments that resist fire more available for use in crew and passenger compartments that resist fire more effectively. In keeping with its policy with respect to materials, the FAA issued NPRM 69-33 on 12 August 1969, to upgrade these standards. The final rule is now in preparation.

Furthermore, the FAA experts were of the view that the presence of oxygen-dispensing equipment does not constitute a fire hazard. Oxygen is dispensed to all aircraft occupants only in the rare instance of cabin depressurization at high altitude and, even then, in small quantities relative to the cabin volume. When oxygen is dispensed, smoking is again prohibited.

Oxygen is not a combustible material. Oxygen is required for combustion of flammable materials, and a third component, a source of ignition, is also required for burning to occur. FAR 25.1451 and 25.1453 state protective requirements to prevent oxygen carried in transport airplanes from participating in a fire. Essentially the oxygen is kept separate from both flammable materials and sources of ignition and prevented from being accidentally released. While oxygen itself is not flammable, it will increase the combustion rate of any burning material with which it comes in contact. It should be noted that the total maximum flow of supplemental breathing oxygen through all the passenger masks will increase the cabin oxygen content only very slightly - on the order of 1% or 2%. This is not an additional hazard regarding flammability of cabin interior materials.

The passenger oxygen system on turbojet aircraft does not have oxygen in the lines located above the passenger service units in the passenger cabin until the cabin altitude goes above 12,500 feet or the system is turned on manually in the cockpit. Then, the initial surge of pressure into the lines opens the oxygen mask door in each passenger service unit, the attendant stations and the lavatories causing the masks to drop out. Any time the line is pressurized, the "No Smoking, Fasten Seat Belts" and lavatory "Return to Cabin" signs illuminate.

Portable oxygen bottles are used when oxygen is needed or desired on an individual basis. Stewardesses are instructed to see that smoking does not take place in the immediate vicinity of a passenger using oxygen.

(2) There is no sound basis for concluding that smoking aboard passenger-carrying commercial aircraft constitutes a health hazard for nonsmoking passengers amounting to a health emergency.

The FAA medical experts have advised that, while smokers may endanger their own physical well-being by smoking, there is no sound basis to support petitioners assertion that smoking by passengers in passenger-carrying civil aircraft poses a substantial threat to the health of nonsmoking passengers. Hence, there was no reason why the FAA should have acted here on any emergency basis.

Neither the material submitted by petitioners, nor any other information now available to the FAA medical experts, indicates a danger of loss of, or threat to, life or permanent injury to health due to exposure to tobacco smoke on board today's well-ventilated passenger-carrying aircraft.

The evidence and data available, including that submitted by petitioners, all related to health hazards of tobacco smoking in a confined environment. But, as the FAA experts point out, the environment in a certificated passenger-carrying commercial aircraft is not such a confined environment as is dealt with in this material.

This is the significant difference: Under the FAA certification requirements regarding cabin air for passenger-carrying aircraft, an exchange of air in the aircraft occurs approximately every three minutes during flight. The exhaust air system for passenger-carrying civil aircraft is unique in that air is not

funneled out through specific ports or tubes, but is in fact, passed through the very walls, floors and ceilings of the inner shell of the cabin. This is unlike the common system of air conditioning in which input ducts at one location and exhaust ducts at another location produce a definite air flow pattern, or draft. Air conditioning odors or smoke which exist on board aircraft, is not drawn over, under or around the occupants of the cabin. The air, including smoke, simply passes out of the cabin via the most direct route from its source (generally in the ceiling above the aisle or from individual ducts above the passenger's seat) to the nearest wall, ceiling or floor. The occupants of a modern aircraft are provided better isolation from smoke, dust and odors than they are in their homes, automobiles, and other surface transportation systems. In fact today's passenger-carrying commercial aircraft may be one of the healthiest environments available to the average American in today's polluted world.

Contrary to petitioners' assertion, tobacco-smoking in aircraft passenger cabins does not prevent compliance with FAA ventilation standards set forth in 14 CFR 25.831 and 29.831, in that any concentration of tobacco-smoke is greatly reduced when mixed with ventilation air. Preliminary results from a joint FAA-HEW study indicate that a typical fully-occupied cabin (165 passengers for the Boeing 707, 224 passengers for the Douglas DC-8), would contain an average carbon monoxide and carbon dioxide concentration of less than 5 parts per million ("ppm"), as a result of passenger smoking. This is considerably less than the 50 ppm concentration limit established by the FAA.

In the absence of any reliable data concerning aircraft cabin air contamination, there was no reason to believe that passenger smoking would have a significant effect on the health of nonsmoking passengers. As the FAA medical experts explain: For years doctors have tried to deliberately instill medications (antibiotics, decongestants, etc.) into the inner areas of the lungs, and have been hampered, if not defeated, by the very nature of the act of breathing. The problem is that the air in the deeper portions of the lungs does not actually leave the areas everytime one exhales. There is never a true turn-over of the air mass in the lungs but merely a degree of mixing of old and new air. It takes many exchanges of "new" air, which for the ill patient might contain moisture plus decongestants, before the doctor can get a good concentration of the drug where he wants it. Consequently, there would need to be heavy concentration of smoke and many, many exchanges of this heavy vapor before a person would get large quantities of contaminent deep into the lungs.

To cause the kind of damage to the lungs of nonsmokers suggested by petitioners, the FAA medical experts explained a nonsmoking passenger would have to make a deliberate effort to inhale the concentrated smoke from the end of a cigarette. In any event, before he could get any significant amount of contaminent in his lungs, irritation of his nose and throat would drive him off to a safe distance. The information which is available on modern well-ventilated aircraft (including preliminary data from a current FAA-HEW study) indicates that there is no reason to believe that the nonsmoking passenger would be exposed to an

amount of contaminent sufficient to be considered "hazardous" to his health, so as to require emergency action to protect it.

The ANPRM has generated many comments by the medical community which have been incorporated into the Regulatory Docket. Particularly helpful are extensive comments on the medical materials presented by petitioners, including a review of pertinent articles presently contained in medical literature, which has been submitted by the fir Transport Association.

As noted by the FAA medical experts: The environment of the modern aircraft is well-ventilated. No technical studies concerning concentrations of gases or particle matter in environments similar to the modern well-ventilated aircraft have been presented to the FAA. And the FAA is not aware of any studies involving such a well-ventilated environment. A review of the literature referenced by the petitioners reveals that the environments and study criteria there involved were limited to confined and unventilated rooms. None of the references cited, especially with regard to human beings, presented the concentrations of tobacco smoke in the atmosphere, nor were ventilation rates defined. Literature does not reveal epidemiological evidence, i.e., a pattern of cause and effect among case histories, indicating that intermittent indirect exposure to tobacco smoke constitutes a major health hazard.

FAA medical experts further pointed out: The problem created by smoking on passenger-carrying aircraft for persons suffering from allergies or from diseases which may be aggravated by the possible irritating effect of tobacco smoke is no greater than that which they must face in stores and other buildings open to the public, in other means of public conveyance and even when walking on the streets of some of our larger cities. Moreover, considering the rapid exchange of air in today's aircraft and its unique ventilation system, these passengers have an opportunity to seat themselves in a location where they will be able to breathe air effectively isolated from the smoke generated by other passengers. Although moving about the airplane may bring these passengers in contact with tobacco smoke, this exposure is no greater than that which they must face at an airport before and after their flight. If their condition is serious enough that they must have available a medical device (a mask or a separate oxygen system), for use in public places where they might encounter tobacco smoke, then they will have such a device available for use on an aircraft, and will be able to use it for their protection. Therefore, I am persuaded that no emergency exists regarding the health of passengers with allergies or diseases which may be aggravated by possible irritation from tobacco smoke.

FAA experts were of the opinion that the matter presented by the petitioners (and by others) warrants an in-depth exploration of the health hazard question as related to nonsmoking passengers. They have advised that meaningful assessment of the magnitude of the possible safety hazard created by passenger smoking must await completion of more extensive scientific inquiry into this problem, specifically considering the environment within a passenger-carrying airplane. The FAA and the Department of Health, Education and Welfare have entered into a joint study to measure the amounts of tobacco smoke contaminents in air transport aircraft, using flights carrying military personnel and dependents as a "test bed" for the study. The test period which began in January 1970 is

scheduled to run for approximately one year. By the FAA's ANPRM issued 19 March 1970, public comments was invited on this problem. The FAA has received a large number of responses (some 3000 letters) and is now studying these comments and suggestions.

(3) Petitioners' assertion that an emergency exists as a result of "unjust discrimination" against nonsmoking passengers is unsupportable.

It is clear from the petition that petitioners assert economic discrimination against nonsmoking passengers as a result of smoking aboard passenger-carrying aircraft. They cite 49 U.S.C. 1374(b) which relates to a carrier's duty to provide service, just and reasonable rates, and just, reasonable and equitable division of fares between carriers. Clearly no economic discrimination could result in an emergency in respect of safety in air commerce.

Since the annoyance and discomfort of passengers is unrelated to safety in air commerce and, therefore, not the proper subject for FAA regulation, the factual basis for petitioners' assertion need not have been considered.

(4) Smoking by aircraft flight crew members does not reduce the high level of safety required in the public interest for passenger-carrying aircraft.

No substantial evidence has yet been obtained by the FAA demonstrating that the presence of the toxic substances contained in tobacco smoke in the crew compartment, or the smoking of cigarettes by members of the crew, can cause a decrease in night vision sensitivity, reaction time, judgment or decision-making capabilities, to a degree that the high level of safety required in the public interest for passenger-carrying aircraft would be so reduced as to constitute a hazard to air safety. While there is some evidence that pilots who smoke cigarettes with deep inhalation may experience some decrease in night vision sensitivity [rod vision] as a result of the lowering of the oxygen content of their blood, pilots in civil aviation do not depend upon high night vision sensitivity for safe operation. They work with brightly-lighted instrument panels, runways, and anti-collision lights. All pilots, smokers and nonsmokers, rely on the objects they observe outside of the cockpit at night having the required bright lighting, since frequent reference to lighted instruments inside the cockpit of necessity impairs the ability of any pilot to adjust his eyes to the darkness outside.

As for the Piedmont B-727/Cessna 310 collision accident on 19 July 1967, FAA technical experts advised that the possibility of ashtray fires in aircraft crew compartments does not present a significant safety hazard such as would require an emergency banning of smoking by aircraft crew members.

The matter whether any possible safety hazard is created by smoking by members of the flight crew, is presently under FAA study to determine whether any rule making action is required in that regard.

In consideration of the foregoing reasons, it was determined that no emergency existed in this matter in respect of safety in air commerce.

K. M. Smith

Acting Administrator

Issued in Washington, D.C., on this _____7 day of August 1970.

Appendices A, B, and C as attached to

PETITIONERS SUPPLEMENTAL MEMORANDUM IN SUPPORT OF THEIR MOTION FOR PRELIMINARY INJUNCTION AND IN OPPOSITION TO DEFENDANTS MOTION FOR SUMMARY JUDGMENT APPENDIX A

1. Honorable Warren E. Burger United States Supreme Court December 18, 1969

On one occasion I was travelling from Washington to Minneapolis-St. Paul when by head count 37 passengers were smoking and the plane crow insisted they could do nothing although the Stewardesses were as red-eyed as I was. I was finally compelled to leave the plane at Madison, Misconsin, stay overnight and fly to St. Paul the next day.

2. Harold Weiss, Director Automation Training Center Reston, Virginia April 3, 1970

I am a frequent air traveler, typically 2 or more trips a month, and have always been considerably bothered by the high level of smoke in confined areas. Such as airplane cabins. After having some skin tests, I have learned that I am allergic to tobacco.

Jack Greenberg

Director of Research and Development
Miller-Morton
Redmond, Virginia
April 3, 1970

On all flights I had to breath someone elses smoke. Unfortunately, this affects my sinuses and makes me ill. For years I have been leaning back in my seat and hoping the air intake would keep the smoke away from me.

4. Guy K. Sturgis
Director of Corporate Relations
Tyder Systems, Inc.
Miami, Florida
March 27, 1970

Not only is the cigarette smoke injurious to my eyes, but also it causes a sore throat and I am sure that it is adversely affecting my lungs.
(Travels more than 30,000 miles each year.)

5. Mrs. Leonard F. Moreland 2000 Park Avenue Long Beach, California March 26, 1970

I am allergic to cigarette smoke, and when I left the plane in Chicago, I could not see, smell, hear or taste, and my face looked as though it had been used as a punching bag by an apprentice boxer — my eyes were swollen shut, my lips were so puffed—up that the upper lip was blocking my hostrils, and my ears were so plugged—up that I required medical attention as soon as we arrived in Milwaukee.

6. Hiss Millicent Brown New York City, New York Harch 29, 1970

I am a non-smoker. Exposure to cidarette smoke causes sore throat, coughing, phlegm, and other symptoms.

7. Roed M. Powell
Associate Dean
Ohio State University
April 4, 1970
(Professional Traveler)

On a recent trip I left the airplane semi-asphyxisted, having inhaled snoke fum all sides during my journey. This inhalation affects my throat and voice so that I can not perform my job as effectively.

8. William G. Kulle Cornellus, New York March 27, 1970

I cannot say for sure that breathing some other person's smoke si injurious to my health but I don't need to ask onyone about how it burns my eyes and nose and gives me a sore throat and headache.

9. Grant A. Stucki
D.D.S., Momber of United
Air Lines 100,000 Mile Club
Chicago, Illinois
Harch 25, 1970

The problem is that breathing smoke continuously gives me a violent headache. I feel sick all over. Many times I can't even eat the food that is there.

10. Herbert Argintar, P.E. Teaneck, New Jersey March 26, 1970.

I am a 100,000 miler -- 100,000 miles of choking on billowing, nauseating digarette smoke and throat i-ritating digar smoke.

Houston, Texas
March 26, 1970
(Frequent Traveler)

Truly dread the time when the "No Smoking" sign is extinguished and it seems that the cabin is immediately filled with blue cigarette smoke. I can't say that this is harmful to my health but I do know that the condition is extremely irritating to my mose, throat and eyes.

12. Mr. & Mrs. Daniel Comotta Sarasota, Florida April 3, 1970

I would like to go on record as being strongly against smoking being permitted on planes as it is for me a cause of deep nausea and I am therefore forced to hold tissues against my mouth and note to breathe through them for the whole trip.

13. R. A. Sheares'
Hensor Corporation
Houston, Texas
March '26, 1979

On nearly every flight I have been on, I have left the plane slightly ill and on two or three occasions very ill-to the point of nausea. On these occasions the effect usually lasts about 6 hours.

14. Came Wilson
American Mutual
Charleston, South Carolina
April 1, 1970
(Ex-Air Force Pilot)

I fly several times a year. Believe me, after 10 hours of emposure to the smoke filled environment, the trip is an ordeal and it takes a day to get over the hangover from the pisons inflicted on my person.

15. Frederick P. Adler

New York, New York

April 17, 1970

I have had headaches, breathing difficulties and nausea resulting from such smoking.

16. Gene A. Broadman
University of California
Tenemore, California
April 7, 1970
(50,000 Miles Annually)

I get a nauseated feeling in my stomach, a stuffed-up nose and a dull headache -- slows me down for a day or so.

17. Kenneth Lynch
President
Kenneth Lynch & Sons.
Wilton Connecticut
April 13, 1979
(Constant Traveler)

I am generally sick from one to three days after making a flight of even one-hour duration.

18. E. Gillette Wodrich
Lt. Col. USAF Ret.
Satellite Beach, Fla.
Harch 28, 1970

The smoke bothers my ness and throat! And continues to irritate for neveral days following a flight.

19. Howard J. Schwartz
Interactive Data Corp.
Waltham, Mass.
March 26, 1970

The smell is not only offensive, but I find my throat reacting as if I were puffing away at two packs a way.

20. S. W. Shepard
Attorney at Law
Clula Vista, California
April 7, 1979

As an asthmatic I can state unequivocally that the irritant in tobacco smoke -- adversely affects my sinuses, which in turn aggravates my asthmatic situation.

21. Samuel Silver
Professor of Engineering Science
University of California
Berkeley, California
April 6, 1970

I have had to travel a great deal in the past few years and the exposure to smoke has made life wirtually miserable. In addition to my masal passages and my lungs becoming congested I had to put up with my clothes recking from stale tebacco odors and disconfort resulting from exposure lasting for several days.

22. Donald C. Weber
Jacksonville, Florida
April 12, 1970

A cloud of smoke as blown by an individual or direct burning tobacco emission causes my eyes and throat to become irritated.

23. Mrs. Prancis Carroll El Pago, Texas April 11, 1970

Being a non-smoker, my eyes watered. I had a mild headache and nausea making my trip very unpleasant.

24. Roy E. Leiner
Castro Valley, California
April 7, 1970

I have traveled by air in excess of 600,000 miles, and as a hayfever sufferer - was in misery as a result of smoke - I am only one of thousands in like position.

25. Kark G. Toplon
Capitol International Airways
Nashville, Tennossee
April 8, 1970

On several occasions in the past five years when I have been on aircraft, I have suffered severe eye irritation as a result of smokers nearby.

26. Jack Hubbs

Medical Secretary

Washington Conference of

Seventh Day Adventists

Seattle, Washington

April 9, 1979

My employment requires that I travel frequently by air to different sections of the United States. I have an elergy that affected by tobacco smoke and at the end of every air journey I have to have medical attention before I can carry out my assigned duties.

27. Mr. David C. Ellis McLean, Virginia April 10, 1979

The reaction which almost immediately begins after such emposure is burning eyes, runny nose and scratchy throat. If exposure is severe in degree or length, then headaches and nausea follow. This may last for up to 12 bours after exposure.

28. Ben F. McDonald, Jr., Esq. Corons Christi, Texas
April 21, 1970
(25,000 Miles per Year)

At the end of some of these trips by aircraft my eyes hurn like someone has been rubbing them with salt, my hair and clothing reeks -- my skin burns and I am in no condition whatsoever to accomplish the results of my trip.

29. Dick D. Heller, Jr., Publisher Decatur, Indiana April 19, 1970

For the past twenty years I have suffered when flying on commercial flights from the smoking of others. Not only is the smoke irritating and annoying, but cigar smoke is nauseating and certainly aggravates any tendency toward air sickness a passenger might have.

30. Miss Leslie Thomas
Upper Darby, Penna.
April 19, 1970

ity major annoyance was the sore throat, the burning eyes, and the lack of appetite one feels after several hours of exposure to any unpleasant odor.

31. Dr. Theordore Eurton
Vice President & General Manager
The Genealogical Society
Salt Lake City, Utah
April 21, 1970
(Travels weekly)

It endangers my health, is nauscating to me, causes my eyes to burn, and causes me general disconfort.

32. Firs. Harriot Taylor Salt Lake City, Utah March 25, 1970

> We experience a lot of discomfort from coughing, burning of throat, eyes and other symptoms of severe irritation, which we had noticed from the smoke previously, and thought it wise to see our Doctor, who -- found no other cause for this trouble except it might be from the effects of tobacco smoke.

33. William J. Finn
Round the World Travel Agency
Cleveland, Ohio
Hay 6, 1970

From my own tours members I am frequently asked to change scatting because the party they are scatted with is a smoker. In many cases myself I have moved to another scat when possible because of an irritating pipe, cigar or cigarette smoker.

34. Luther D. Sunderland Apalachin, New York Nay 1, 1970

The smoke bothers me in two ways: first, the rising smoke from a burning digarette is the most irritating, and second, the general accumulation of smoke in the cabin is also bad because there is no way to get away from it.

35. Helen M. Ratner
Detroit, Michigan
May 4, 1970

By the end of the trip my throat was sore and hourse, within twenty-four hours I had come down with a respiratory and sinus infection.

36. Mr. & Mrs. Ralph Young Serasota, Plorida May 2, 1970

In our particular case, my wife has had very serious smoke poisoning and -- when we do fly she has to carry a small battery operated fan to blow smoke away.

37. Harold W. Murphy.
Flight Captain
General Dynamics
San Diego, California
Hay 4, 1970

As a pilot in command I find that smoking in the cockpit is both distracting to performance and distracting to concentration. It also in my opinion, presents a serious potential fire hazard. As a passenger, I find it to be bothersome, frustrating and obnoxious.

38. Mrs. M. B. Buckherd Clula Vista, California April 27, 1970

I, for one, have had to stop using the airlines because of an allergy for tobacco smoke. I have deplaced with my head splitting, my nose bleeding, and my eyes watery and burning.

Jirector of Development
Nebraska Christian College
Norfolk, Nebraska
April 27, 1970

Aside from being unhealthy, it seems also unfair that the non-smoker must endure the discomfort of smarting eyes, and a burning throat to satisfy the eraving of an addicted smoker. (Cornercial pilot over 5,000 mikes)

40. Calvin T. Webb Tooele, Utah April 28, 1970

I find it induces a severe headache and nausca when I am exposed to dense smoke of any kind.

A1. Frank P. Tangel
Assistant to the President
Butoni Feeds Corporation
South Hackensach, New Jersey
April 23, 1970

It has been my experience many times while flying on commercial sircraft to have become irritated and sometimes almost nauseous.

42. Mrs. Virginia H. Wauer - Los Angeles, California May 15, 1970

The smoke causes me to cough and I believe it is detrimental to my health.

43. Allen Latham, Jr.
Jammican Plain, Massachusetts
May 17, 1970

I am a robust person in good health, but a few hours in the passenger cabin usually leaves me with my eyes smarting and my throat irritated. This strain of this ordeal definitely leads to impaired working effectioncy for a day or two.

44. Barbara Pichnond Baton Rouge, Louisiana May 16, 1979 -

Being both a non-smoker and a contact lens wearer, I am usually in acony for the entire trip.

45. John A. Abbott Marlo Park, California April 11, 1970

I travel 25,000 or more miles each year on business: -On these flights I am frequently in discomfort with inflamed eyes and respiratory tract.

46. Sidney B. Semoi Professor, University of Passachusetts Amherst, Massachusetts Emy 11, 1970

I have never yet flown in a commercial transport where I did not suffer tremendous discomfort and sometimes pain.

47. R. L. Follmor Houston. Texas Hay 19, 1970

I have found it to be very uncomfortable and hard to breathe on flights -- I have seen holes burned in seats, drinks and food spilled because of smoking and carlessness.

Dayton, Ohio
May 11, 1977
(Research engineer for Air Force - several trips a year.)

My clothes and hair reek of cigarette smoke and my eyes and throat are irritated. On occasion I have been so physically irritated by the cigarette smoke pollution, I have asked that the "No Smoking" light be turned on.

49. Charles W. Muhan
Dallas, Texas
May 14, 1970
(27 years as airline pilot)

On the occasion when I ride as a passenger I find the smoke very annoying and eye-irritating. There is just not enough ventilation in any of our airline equipment to remove the smoke before it reaches the non-smoker. The overhead vents are useless and do nothing but circulate the smoke.

50. Edward Simon
Professor of Biological Sciences
Purdue University
Nay 12, 1970

I fly frequently and often I am made physically ill by the mass of smoke which infects the plane.

51. Hon. Albert Bronson Maris Senior U.S. Court Judge Yealon, Pennsylvania May 14, 1979

I have occasion in the course of my judicial duties and otherwise to travel extensively by mir. I do not smoke but I am frequently obliqued -- to sit alongside a smoker -- which is particularly irritating to me and probably a health hazard as well.

52. Robert G. Votor, Ph.D.
University of Connecticut Health Center
May 5, 1970

Within 20 minutes after take-off I normally develop headache and upper respiratory distress -- and do not feel free of these symptoms for 12 to 24 hours following the flight.

53. William J. Monsour, M.D.
Medical Director
Fonsour Nospital & Clinic
Jeannette, Pennsylvania
May 6, 1970

I traval on planes approximately 25 times a year and find that it is irritating and unhealthy for all passengers to breath the amount of dense eigarette smoke in such a restricted area.

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54. W. C. Ellis
San Diego, Califronia
May 12, 1970
(22 years with 3,500 hours as crewmember)

I can attest to the personal discomfort a non-smoking passenger experiences when confined in close proximity with smokers. This annoyance is more pronounced as the cabin pressure is reduced.

55. James D. Tilford, Jr.
Telford Plying Service
Palm Beach, Florida
May 12, 1970

The air evacuation system is totally incapable of removing all the smoke, and it is my personal observation that the fastest known period of time is the period between when the seat light goes off and the first idiot lights up.

56. Carl M. Gonder, Jr. Subboch, Texas Nay 4, 1970

I usually wear a face mask to filter the smoke but it still irritates my masal passages to the extent that I have to go to a doctor after each trip to get something to sooth my throat, clear up my sinuses.

57. John C. Gallagher, M.D. Treasure Island, Florida May 16, 1970

To a non-smoker, smoke is frequently irritating, annoying and a physical discomfort.

55. Elizabeth Beder Pleasontville, New York May 19, 1970

At the best, digarette smoke is annoying to most non-smokers (whose sinus passages are usually affected), at the worst it presents a terrifying health hazard to the person with a serious smoke allergy.

59. George Morrison

Zast Norwich, New York

May 16, 1970

As a non-smoker whose work requires frequent air travel, I consider I have a right to breath air unpolluted by tobacco smoke, which is not only a source of annoyance and discomfort to me but which constitutes a danger to my health and physical well-being.

60. Fred J. Edeskutz

Los Alamos, New Mexico

June 12, 1979
(Been flying for 12 years - 100 flights per year)

Two or three smokers in the vicinity for more than f few minutes are frequently enough to cause me to have an allergic reaction resulting in severe headaches. On many such eccasions upon my return home I have to hand my clothing outdoors for several hours to keep the smoke order from filling the closet.

61. Mrs. Rosina Todd Virginia Beach, Virginia June 13, 1970

I have traveled tens of thousands of miles worth of smoke filled cabins on airlines and I now, in the strongest of terms urge your immediate attention to this deprivation of my rights as a non-smoker. Cigarette smoke in a closed environment is unhealthy, discomforting and obnomious and non-smokers should not be forced to breathe smoke saturated air.

62. Olya Myers
Honolulu, Hawaii
June 10, 1970

As a non-smoker sitting in a cabin full of cigar, cigarette or pipe smoke I have often wheezed, coughed and choked as I have flown various places. My eyes have watered and smarted.

63. Cloment J. Todd Golden, Colorado June 5, 1970.

Tonight I begin a multi-week business trip by air: the air I will be breathing on the aircraft will not be healthy due to a consistently high concentration of tobacco smoke in the air.

64. David M. Kirr
Irwin Management Company, Inc.
Columbus, Indiana
June 5, 1970

As a frequent traveler on corrected aircraft and a non-smoker, I am continually assaulted by people sitting next to me and subjecting me to the nauscating smell of digarette smoke. My own personal solution to the problem is to turn the air duct on full force and point it directly at the offending source of foul smoke. This works only a small part of the time however.

Florida State University
Tallahassee, Plorida
June 5, 1970

I am a biophysicist, a non-smoker, and a frequent airlines passenger. The "air" makes breathing uncomfortable, burns my eyes so much that I sometimes am forced to keep them closed, often gives me a headache and always causes my skin, hair and clothes to reek unpleasantly for hours afterwards.

66. Fr. & Hrs. Maurice C. Lyon Escendido, Califronia June 4, 1970

Upon alighting our clothes reek of spoke, our eyes are watery and our throats are raw. All the way from San Diego to Salt Lake City we had to endure a blue haze. The air conditioner was working, but not enough to clear the air.

67. S. Youngwell, President
Transaero, Inc.
Pilneola, New York
June 3, 1970

About two weeks ago, the undersigned checked into the quarter one hour and fifteen minutes before flight time and tried to get a seat in the No Smoking section (747) but it was already completely filled, according to the airline, by non-smokers.

68. Richard B. Cotten
Conservatives Viewpoint
Washington, D. C.
June 4, 1970

Despite any effort on my part, I am not able to breathe acceptable air on the aircraft and frequently arrive at a destination ill at the very time I am endeavoring to embark on a speaking tour.

69. John C. Duffy, M.D.
University of Minnesota
Minneapolis, Minnesota
June 1, 1979

As an aviation Medical Examiner, frequent commercial traveler and a physician who regards smoking as a serious health hazard, and a non-smoker. I wish to make explicit my conviction that spoking should not be permitted on air carrier flights.

76. Mr. & Mrs. Leslie Johnston Salt Lake City, Utah May 25, 1970

. Sitting next to a woman that smoked all the time we were in flight and this caused my eyes to be red and irritated. The tobacco smoke was an annoyance and discomfort the entire trip.

71. R. V. Boyd China Lake, California (Private Dilot) (one cross country trip a month) May 26, 1970

I have started many flights with a clear head and eyes only to develop red eyes, a runny nose and sinus head ache by the time I reach my destination. I use the air vents to their maximum effectiveness.

72. Mrs. Beulah S. Ransdell New Rochelle, New York May 11, 1970

Tobacco allergy, presumably due, according to leading allergists to my four years remidence in North Carolian tobacco towns. Despite my wearing a moistened surgical mask and having three seats to myself in Row 6 I arrive at my destination with a throbbing headache and badly irritated masal passages like sinusitis, which conditions last for two or three days.

73. Mrs. Robert Reinaiz
Mission Viejo, Califronia
June 19, 1970

On a recent flight from Los Angeles to Houston, we were bothered by a most unpleasant experience. We found ourselves completely surrounded by smokers. The lady across the aisle and myself were in a state of near nausea the entire trip. But by far the worst affected was our 5 year old son, who suffers from asthma and is extremely sensitive to cidaratte smoke. By the time we arrived in Houston, he was wheezing and coughing pathetically and required medication.

74. Eldon Parker, Jr., Member House of Representatives Harrisburg, Pennsylvania June 8, 1970

snoke coming from a passenger seated a few inches away causes me to choke, makes my eyes water and makes concentration next to impossible. I consider smoking injurious to one's health and have sponsored legislation in the Pennsylvania General Assembly to educate people about its dangers and to discourage the practice.

75. Mr. and Mrs. Earb Dudgeon Leesburg, Florida June 17, 1970

I have trouble breathing almost a day after riding with smoking passengers.

76. Frederick Menich, M.D. Port Chester, New York June 3, 1970

The atmosphere was clouded to the point that a smoke haze existed throughout the entire flight. Distressing eye-tearing, coughing and much discomfort were further prolonged by a delay over New York. (Pan Am. 747) Something must be come about the smoke problem in aircraft - in the 747 it is intolerable.

77. Mr. and Mrs. Martin Bergeland Dawson, Minnesota
June 18, 1970

An arrested case of tuberculosis, I'm very sensitive to tobacco smoke.

78. Joseph H. Daoust FCAB Dearborn, Michigan June 10, 1970

I personally am alergic to pllea, dust and smoke-filled air and I suffer sinus infections, sneezing and other hay fever reactions from being exposed to smoke-filled rooms for any length of time.

79. Kiss Pat Horning
Associate Editor
Insight
Takoma Park,
Washington, D. C.
June 16, 1970

Too many times I have walked off a plane with a blinding headache and stinking clothes.

89. Ernest C. Rall
The Hall flying School
Warren, Ohio
June 29, 1970

Tobacco smoke smarts my eyes and irritates my throat and pollutes my clothing.

81. Winston Smith
Sanitary Engineer PHS
Rockville, Maryland
June 22, 1970

Irritation (sic) to your eyes and throat, and making your clothes smell. I suffer from mild hay fever, sinusus, but one of the few things that will irritate it is smoke.

82. David A. Depow Alahambra, California June 21, 1970

The smoke from digarattes creates irritation of my eyes and nose. This adverse affect is still noticeable two or three days after arrival at my destination. The efficient and proper conduct of my work after a flight is impaired. (Travels about 20,000 miles a year)

83. Rodney D. Snider

Boise, Idaho
June 14, 1979

(Commercial pilot for 14 years and now executive flying)

The smoke is very irritating to my eyes and causes tenseness of eye muscles and sometimes a sick feeling in my stomach. A one hour flight in smoke is more exhausting than an 8 hour flight without smoke. Patique and burning eyes tend to make night flying a real chore at times, not to say anything about the safety of the flight.

84. Lloyd E. Redd President, Tandy Leather Co. Porth Worth, Texas June 15, 1970

There are many people who find digarette smoking offensive and in many cases, my own, for example it causes head stuffiness and headaches.

85. Donald W. Ericson
Sunnyvale, Califronia
June 16, 1979
(Private Pilot)

Although my wife and I are normal healthy people with no allorgies, the smoke pollution we encounter on all correctal flights causes irritation to our eyes, nose and lungs and gives us headaches.

86. Ralph T. Hoorenny Riverside, California June 16, 1970

Tobacco smoking is a cause of headache and respiratory distress to the non-smoker who is forced to sit in an environment where there is continuous smoking.

S7. Connie Becbe Itiah, California June 14, 1970

It is very uncomfortable for me as a non-smoker to have to breathe the smoke of someone else. It gives me a headache plus the awful smell it leaves in my clothes.

Robert M. Rinker
Executive Vice President
Hawaii Not. Assoc.
Ennalulu, Hawaii
June 18, 1970

My own personal experience in recent years has forced mo to change my seating position on numerous occasions in order to avoid eye irritation and nausea from eigerette funes.

89. Allen B. Roth
Atlanta, Georgia
June 16, 1970

As a member of the General Aviation SWAP Team based in Atlanta, Georgia it is necessary for me to travel by air carrier on a regular basis. It has been my experience that the concentration of smoke in the passenger cabin is alwhys highly objectionable and in some instances almost intolerable.

90. Marie McCall, R.N. Atlanta City, New Jersey

Furthermore the flight would be so much pleasanter if one could arrive home without smarting eyes, throbbing headache and smelly clothes.

91. William J. Hall Charleston Heights, South Carolina July 17, 1970

By entire family was nauseated by the stell smoke constantly being blown into our faces both by the individuals smoking and by the air conditioning system.

92. Mrs. Jane Schuster Kenyon, Mn. July 15, 1970

I know none of us appreciated getting off the plane with sore red eyes plus smelling like a smokingbar.

93. Dimitri Rebikoff
Chairman, Bd. of Directors
Ribikoff Underwater Prod. Inc.
West Milbousne, FLorida
July 14, 1970

Our present airliners constitute not only an acute discomfort through the smoke's irritating solid particularities, but also a danger through the enhanced absorption in the bloodstream of highly poisonous carbon monoxide and tobacco tars.

94. Mr. M. Dale London Augusta, Georgia July 15, 1970

I suffer from various allergies and testify that on occasion I have found it extremely painful, eye stinging, nose and facial areas swollen while sitting on an airplane awaiting take-off.

95. Kenneth H. Cooper, H.D.
San Antonia, Texas
July 14, 1979
(Asked to attend man in plane)

The nan suffered from severe pulmonary emphysema and a combination of hypoxic factor led to his rapid deterioration. One of these factors probably was hypemic hypoxic resulting from dense digarette smoke within the aircraft cabin. __

96. L. M. Nettebury
Sec.-Treas.
Northern Union Conf. 7th Day Adventists
June 26, 1970

It is very noxious to be scated on planes along side an individual who lights up a cigarette - and it is especially bothersome to an individual who has an asthma situation.

97. D. E. Knight
South Salem, New York
June 20, 1970

I've travelled close to a million air miles in the past 25 years and most of it has been made unconfortable by the smokers sitting around me. These people are in reality setting small fires all over the aircraft.

98. Fedelma M. Hart
Primary grade Teacher
Berwin Springs, Hichigan
June 21, 1970

I traveled to Boston from Michigan early this month, and I always get a mean headache whenever I have to be where the air is mixed with tobacco smoke.

99. Mary W. Ballard
Arlington, Virginia
June 19, 1970

On June 6, 1970 I spent eight hours aboard a Pan American Airlines flight from London to New York during which I frequently found myself struggling for breath.

John J. Strotkamp and Gail Rider
Santa Anna, Califronia
June 23, 1970

Cigarette smoking in an enclosed area creates a clear and present health danger to those persons suffering from chronic emphysema, astima, and bronchitis.

101. Thomas Latham
Arlington, Virginia
june 23, 1970

During the last two years I have been a passenger about twice a month. I find that the exposure to tobacco smoke in the day air of the passenger-compartment during a particularly leng flight always gives me an irritated and sore throat. Surrounded with smokers - a situation which results in serious eye irritation and watering.

102. Mrs. Raymond Giordanino California June 22, 1970 (Business Travelling)

I am tired of arriving at my destination with a headache, feeling nausoacus, eyes burning, my clothes stinking of smoke.

103. William F. Glifewell
Professor - Florence State University
Florence, Alabama
June 22, 1970 - - -

To a non-smoker, one hour of breathing tobacco smoke will cause a burning of the eyes, irritating of the membrane of the respiratory tract, and nausea.

104. Arthur A. Babad, M.D. Santa Posa, California June 12, 1970

Smoke (especially from cigarettes) will produce spasms of the bronchioles in susceptible people, and aggravates the production of mucus, which may be difficult for such patients to expell from their lungs. If in fact, it will do this to normal people also, but not to such a sorious degree as to asthmatic or emphysematous patients.

APPENDIX B

Appendick Bear

249



VETERANS ADMINISTRATION DEPARTMENT OF MEDICINE AND SURGERY WASHINGTON, D.C. 20420

MAY 22 1570

YOUR FILE REFERENCE.

IN REPLY REPER TO: 111D

Office of the General Council Federal Aviation Agency Rules Dockets G.C.-24 800 Independence Avenue, S.W. Washington, D. C. 20590

Gentlemen:

The Veterans Administration wishes to support the proposition that cigarette smoking be limited on aircraft which are used as public conveyances.

Because of space limitations of passenger airliners, persons who are non-smokers must frequently be seated in close proximity to other persons who, during the course of average flight, may consume several cigarettes. This means that the non-smoker must often be subjected to the inhalation of cigarette smoke which may, in some cases, cause the non-smoker acute discomfort. This is especially true in the non-smoker who suffers from chronic respiratory disease or allergy.

Sincerely yours,

JOHN D. CHASE, M. D.

Assistant Chief Medical Director for Professional Services

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Include Zip Code in your return address and give veteran's social security number.



DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

PUBLIC HEALTH SERVICE NATIONAL INSTITUTES OF HEALTH BETHESDA, MARYLAND 20014

May 28, 1970

FAA Rule Docket GC-24 800 Independent Avenue, S. W. Washington, D. C. 25090

Dear Sirs:

I would like to strongly urge that smoking be banned or at least segregated to a separate compartment on ALL commercial aircraft. It is apparent to anyone that adequate ventilation cannot be provided without excessive drafts when smoking occurs in the seat next to a nonsmoker. There would appear no other means except to ban smoking. Since I travel about 150,000 miles per year by air and have more than 1,000,000 miles in the air, I speak with experience.

Your consideration is appreciated.

Sincerely,

J. H. U. Brown, Ph. D.
Acting Director
National Institute of General
Medical Sciences

JHUB: jbh

Jun 3 11 15 72 72

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CANCER SOCIETY

DISTRICT OF COLUMBIA DIVISION, INC. 2007 Eye St., N.W., Washington, D.C. 20006 659-2760

June 23, 1970

Nathaniel Goodrich General Counsel Federal Aviation Administration 800 Independence Avenue, S.W. Washington, D.C. 20006

Re: Rules Docket, GC-24, Notice 70-14

Dear Mr. Goodrich:

ETARY

MOFNE

The American Cancer Society would like to add its endorsement to the legal petition submitted to the Federal Aviation Administration by Action on Smoking and Health (ASH). The particular issue of restricting smoking on commercial airliners is significant because it is a beginning step in providing protection and consideration for the non-smoker.

Our staff members have received numerous questions from non-smokers on how they can avoid smoke especially on busses, airplanes and in confined rooms where they must remain. The reasons why these people wish to avoid prolonged exposure to cigarette, cigar and pipe smoke are varied. Some merely find smoke obnoxious and irritating, others have allergies which are aggravated by smoke, and others have serious illnesses, especially those of a respiratory nature, which require a patient to avoid exposure to cigarette smoke.

We are not qualified to comment on how the airlines could implement the proposed ruling because we do not have sufficient technical information on ventilation systems, etc. However, we heartily endorse the petition as a protection for non-smokers. The Society cannot tell a person to smoke or not to smoke, we can only inform him of the consequences. We can also suggest methods to help the smoker quit the habit. The person who chooses to smoke does so only for himself. He should not do so at the discomfort of others around him.

We believe that relief for non-smoking passengers should be provided at the earliest date possible through seating arrangement and/or improved ventilation.

Sincerely yours,

Joseph V. Leverenz Executive Vice President

Y AVAILABLE

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SES

AMERICAN COLLEGE OF CHEST PHYSICIANS

AN INTERNATIONAL SOCIETY

June 18, 1970

Isen, M.D.

President

ister, M.D. dent-Elect

Boyd, M.D. -President

rews, M.D. e-President

dams, M.D. Treasurer

uetze, M.D. nt Treasurer

Soffer, M.D.

ive Director

W. Claxton **Education**

ersch, M.D. Director. d Research

rray Kornfeld

Banyai, M.D. tional Affairs

J. Kissinger ess Manager

tive Assistant

F.A.A. General Counsel's Office 800 Independence Avenue, S.W. Washington, D.C. 20590

ATTN: Rules Docket, GC-24, Notice 70-14

Dear Sir:

The American College of Chest Physicians endorses the proposed rule which would require airlines to separate smokers from non-smokers to protect the health of the non-smoker.

Our organization consists of 8,000 physicians who specialize in either heart or lung disease. We are concerned with the health hazards of smoking and earnestly believe that it would be an important health measure to separate smokers and non-smokers in airplanes. We believe this is vital to patients with emphysema, asthma, bronchitis, and coronary heart disease.

The officers and members of our College are grateful to you for your consideration.

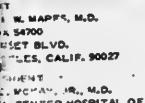
Sincerely yours,

a Soffin

Alfred Soffer, M.D. **Executive Director**

AS:kn

cc: Action on Smoking and Health



E. PCMAM, AR., M.D. AL CENTER HOSPITAL OF VT. GOOW NT. 05401.

VE DIKÉCION 1 G. FRAZIER, M.O.

H. GILLESPIE, M.D.

EY L. HARRISON, M.D.



American Academy of Pediatrics

1801 HINMAN AVENUE + EVANSTON, ILLINOIS 60204
TELEPHONES - EVANSTON 869-4255 CHICAGO 273-3646

June 18, 1970

MERRITT B. LOW. M.D.
GREEN FIELD, MASS.
STEWART C. WAGONER. M.D.
SCHENECTADY, N.Y.
R. MARVEL KEAGY, M.D.
ALTOONA. PA.
JAY M. ARENA, M.D.
DURHAM, N.C.
ROBERT M. HEAVENRICM, M.D.
SAGINAW, MICH.
JOHN C. MACQUEEN. M.D.
10WA CITY. 10WA
DAVID W. VAN GELDER. M.D.
BATON ROUGE, LA.
ROBERT A. TIQWELL, M.D.
SEATTLE, WASH.
SAUL J. ROBINSON. M.D.
SAN FRANCISCO, CALIF.
JORGE CAMACHO GAMBA, M.D.
BOGOTA, COLOMBIA
AZARIAS DE ANDRADE CARVALHO, M.D.
SAO PAULO, BRASIL
JULIO MENEGHELLO R., M.D.
SANTIAGO, CHILE

ra viation Administration

General "Gausselis Office 800 Assistendence Avenue, S.W.

Pashington, D.C. 20590

Attention: Rules Docket GC-24, Notice 70-14

Sentlemen:

The American Academy of Pediatrics has been informed that the Federal Aviation Administration is proposing to the airlines that non-smoking sections on all commerical aircraft be required. This letter is to inform you that the American Academy of Pediatrics strongly supports this proposal. Our organization is the national association of specialty Board certified pediatricians in the United States, Canada, and Latin America. The Academy has an active Committee on Environmental Hazards and recently reviewed the whole question of smoking and children. I am enclosing a reprint of the Committee Statement which resulted from this review, which should be carefully read by those concerned in your agency. I would like to call your attention specifically to the last paragraph on page 758. There is no question in the minds of pediatricians that the inhalation of tobacco smoke, whether directly by smoking, or indirectly by being subjected to the fumes of an adjacent smoker, constitutes a health hazard, not only to adults, but also to children. Pediatric allergists are constantly concerned with little children exhibiting symptoms of respiratory allergies, i.e. nasal congestion, cough, persistent bronchitis, and asthma related to inhalation of tobacco smoke, and frequently many insist that such children not be subjected to this exposure. Even if your agency sees fit to ignore the nuisance factor to non-smokers being subjected to clouds of tobacco smoke during airline flights, you should not ignore the health hazards, particularly those connerwed:with the allergic child.

Sincerely,

Stanley L. Harrison, M.D.

Secretary

SLH: tp

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രമായക്കാട്ടാന Smoking and Health

SMOKING AND CHILDREN: A PEDIATRIC VIEWPOINT

The pediatrician is in an unusually favorable position to reduce the frequency of smoking among young people because of his interest in the prevention of disease and his special experience in dealing with children and teenagers. The hazards of smoking are well-known, and there seems no question but that smoking is etiologically related to carcinoma of the lung and cardiovascular disease. Other conditions, such as pulmonary fibrosis, other malignancies, and emphysema may or may not be etiologically related but do occur more commonly in smokers.

At least three aspects of the smoking problem relate directly to children and teenagers:

1. the short-term effects of smoking by teenagers and children;

2. the effect of tobacco smoke on nonsmokers, be they adults or children;

3. suggestions for changes in the antismoking advertising campaigns so that they see geared to prevent children from adoptand the smoking habit and to recruit the non-smoker into more anti-smoking activities.

There is very little information dealing with the short-term effects of smoking on children and teenagers. There is little doubt that the earlier one starts smoking the greater his chances of developing one of the late effects, but this is not our present concern. Actually, there are data that indicate that smoking teenagers have physical symptoms associated with their habit. Children who smoke have more respiratory symptoms, cough, phlegm, breathlessness, wheezing, and colds than nonsmokers. 2-10

There are other clinical symptoms and personality traits which occur more commonly in smoking teenagers. These may have a coincidental relationship or simply reflect personality factors predisposing to smoking. For example, teenage boys have a higher incidence of traumatic injuries and

teenage girls have a higher incidence of urinary infections than do their nonsmoking associates.7 Furthermore, the smoking teenagers had lower grades in school, were more often truant, and were more likely to have a car available to them.12 It is extremely important that this type of information is not misused since the basis of these relationships are not understood and any explanation of these relationships must be considered to be hypothetical. It is obvious that well designed studies should be initiated to document the incidence and cause of respiratory or other symptoms and to understand the personality and needs of teenagers who adopt the smoking habit.

The second area relates to the effect of smoke on children and nonsmoking adults. A reasonable percentage of the nonsmoking population has an "intolerance" to smoke. The symptoms of eye irritation, rhinitis, headache, cough, wheezing, sore throat, hoarseness, dizziness, and nausea are commonly reported by nonsmokers when present in an environment of smokers. 12,11 Certain pathological findings, such as spirals of mucus (although seen commonly in smokers), will also be found in nonsmokers working in "smoking" environments. 12

Finally, a recent report from Wayne State University indicated that children from homes where the parents smoked had a higher incidence of clinical respiratory disease than did the children of non-smokers.¹² It is obvious that this is an area where more data is vitally needed. Are the intolerances of adult nonsmokers primarily due to bias toward the smoker or are they really due to the induction of physical symptoms by the chemicals in smoke? Does smoking by parents affect the health of the children in that home?

The third and last point for discussion concerns suggestions for basic changes in antismoking campaigns. The present techniques recognize the importance of identifi-

PEDEATRICS, Vol. 44, No. 5, Part I, November 1969

cation in the adoption of the smoking habit, since it is known that children are more likely to smoke if their parents or older siblings smoke.21 Even teachers who smoke can influence the smoking habits of their pupils. A teenager who starts smoking at age 15, who has a parent or sibling as a smoker, and who feels he will continue to smoke will, in all likelihood, become a highly addicted inveterate smoker.12 The present method of advertising appeals to the smoking parent to give up smoking in order to decrease the chance that the children will adopt the smoking habit. As with any addiction, little help can be expected from the addicted since, if they will not stop smoking to protect their own health, it is less likely that they will stop smoking to protect their children's health.

Despite the fact that teenagers and college students have rejected identifying with many other aspects of the society of the older generation, they have accepted the smoking habit. Therefore, it is probably more important to point out this to them rather than to appeal to their parents.

The fact is that teenagers could eliminate the smoking problem without revolution and without new legislation, since they hold the important key to this health problem. They smoke! Here is one national problem they could eliminate almost by themselves.

A second and important aspect of the present anti-smoking campaign is the use of fear. This approach can be expected to be ineffective. The concept of death and disease is so far removed from the mind of the adolescent that it is unrealistic to attempt to frighten teenagers. In fact, it is possible that a fear campaign might seem like a dare to the average teenager. A more appropriate attack on the problem of smoking would be to establish an advertising campaign that made fun of individuals inferring that the adoption of the smoking habit would transfer them into rich, beautiful, sexually attractive, out-in-the-country owners of a new convertible, as do most cigarette advertisements.

A third approach of an anti-smoking

campaign, and one that has been given little attention, is to appeal to non-smokers. It is important to realize that the smoker has established strong defense mechanisms which allow him to give high priority to his need for tobacco. In many instances this need to smoke is placed above the need of colleagues, friends, and family to be in a smoke-free environment. The nature of these defense mechanisms is evident from the responses that were made in a recent survey. Although smokers were more informed about smoking and health:

1. more felt that it was unnecessary for teenagers to worry about cigarette smoking until more conclusive evidence is presented

to indicate real harmful effects;

2. more felt that cigarette smoking is not harmful for the person who smokes occasionally;

3. more felt that normal, healthy people can smoke cigarettes without worrying;

4. more felt that at times cigarette smoking can be beneficial;

5. more felt that smoking is a sign of individualism:

6. fewer felt that smoking is a sign of weakness.

It can be seen that the mental attitude and elaborate defense mechanisms of the smoker present a formidable barrier to any group attempting to reduce the incidence

of smoking.

What appeal can be made to the nonsmoker? First of all, he can be educated to his rights of comfort and freedom from smoke. A recent editorial in Science15 described the high levels of carbon monoxide in the smoking cars of some trains and the abuse that the non-smoker suffers when traveling in carriers that do not provide "separate but equal" facilities. The question of infringing on the rights of others is even more important when considering children, since they wield little influence over their environment. Those of you who have attempted to stop an inveterate smoker, either parent or doctor, from smoking on an inpatient pediatric service can realize the magnitude of the addiction. Thus, an effective campaign could inform the non-smok-

ing public that they have to take a more acve part in preventing individuals from اند. anoking by letting the smoker know that he is infringing on the rights of others by littering public places, polluting the air, and causing discomfort to some non-smokers. A number of clever advertisements depicting the average smoker in situations that are annoying to the non-smoker (airplane, theater, train) could be very provocative. Finally, it may be legally possible for the nonsmoking public to limit the areas and circumstances where smoking is permitted by appropriate legal means, albeit without the taint of coercive restraint or prohibition.16,17

We are certain that some of these suggestions may evoke emotional complaints from smokers as being too coercive and from the prohibitionists as being too soft. If our goal is to prevent the adoption of smoking by children, then we think all will agree that some revolutionary approaches are in order, and we all know that even minor revolutions, such as enjoining people from smoking in public places, are discomforting to someone.

or F. Wehrle, M.D., Chairman

ROBERT L. BRENT, M.D.

JOHN L. DOYLE, M.D.

LEE E. FARR, M.D.

EMMETT L. FAGAN, M.D.

LAURENCE FINBERG, M.D.

Andre J. Nahmias, M.D.

DONALD E. PICKERING, M.D.

JAMES N. YAMAZAKI, M.D.

ROBERT J. M. HORTON, M.D., Consultant

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PEDIATRICS, Vol. 44, No. 5, Part I, November 1969

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EHLENBECK. D.N.

June 18, 1970

F.A.A. General Counsel's Office 800 Independence Avenue, SW Washington, D.C. 20006

> Attn Rules Docket, GC-24 Notice 70-14

Gentlemen:

According to the Surgeon General's own figures when he first issued the famed report on Smoking, 60% Sixty Percent of the population DOES NOT SMOKE. We think these figures are even higher now.

We object to smoking on planes. There should be a place for those who wish to smoke, or they should wait till they get off the plane.

Sincerely

Bob Bickford

Executive Director

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PAUL R. ENSIGN, M.D. Acting Director of Health

DIVISION OF HEALTH

64 MEDICAL DRIVE RALT LAKE CITY, UTAE 84113 AREA CODE 801, \$28-6111

June 2, 1970

Board of Health
Health Facilities Council
Norsing Home Advisory CoWater Poliution Committee
Alcoholism Committee
Modical Examiner Committee
Air Conservation Committee

OFFICE OF THE DIRECT

Federal Aviation Administration c/o Office of General Council Rules Dockets G. C. - 24 800 Independence Avenue, S.W. Washington, D. C. 20590

Gentlemen:

It will be difficult for anybody to prove or disprove that smoking on airplanes is a physical health hazard to non-smokers. Due to the close seating arrangements and the inability to move away from the smoke, one would expect that exposure for long periods of time would be a physical health hazard. This could be especially true if the reported amounts of tar cleaned from the ventilation system is true. I have not checked on these reports so cannot say.

There could be no doubt that from the standpoint of emotional health and upsets that it is a health problem. It should be considered that the majority of non-smokers abhor having smoke blown in their faces as it is on passengers strapped down in airplanes while their seatmates blow smoke in their faces.

There are non-smokers who have been made ill, nauseated and vomiting by the cigarette smoke blown in their faces by smokers. For this reason there should be no difficulty making a positive statement that cigarette smoke contributes to the discomfort of airplane passengers. Because of this discomfort, many persons would not ride airplanes if they can go by any other means.

It is hoped that you will seriously consider either banning smoking or arrange separate seating for smokers.

Sincerely yours,

Paul R. Ensign, M. D. Acting Director of Health

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State of Illinois Department of Public Health Springfield 62706

MELIN D. YODER, M.D., M.P.H.

May 28, 1970

Federal Aviation Administration Office of General Counsel Department of Transportation 800 Independence Avenue, S.W. Washington, D.C. 20590

Attention: Rules Docket GC-24

Dear Sir:

The March 25, 1970 issue of the Federal Register contained an advance notice of proposed rule making regarding smoking on aircraft (pages 2552 and 2553).

I would like to register my support for the adoption of a rule by the Federal Aviation Administration which would require separation of smoking from non-smoking passengers or limit smoking in some manner. Possibly such a rule might be applied to all means of public transportation. Smoking is not only deleterious to the smoker but it is also an annoyance and discomfort to the non-smoker.

Yours sincerely,

Franklin D. Yoder, M.D. Director of Public Health

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UNIVERSITY OF MIAMI MIAMI, FLORIDA 33152

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U.S. DIPT. OF TRANSPERFATION

Neiting Address:
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1970 MA: 27 AM 9 59 May 18, 1970

Location:
NORTH WING
PACKSON MEMORIAL HOSPITAL

con A. Volpe

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OFFICE OF SECRETARY
OF TRAKSPOOTATION
EXECUTIVE SECRETARIAT



: Mr. Volpe:

beed you will find a copy of a resolution by the Dade County Medical Association and the Florida Lad Association urging you to require that all smokers riding public air planes be required to sit exparate compartment so as not to be a public nuisance and a source of respiratory distress to ther people who have a right to fly in comfort.

member of a Medical School faculty; Chief of Chest Disease Section at Jackson Memorial Hospital the largest hospitals in the South eastern part of the United States; as Chairman of the Florida littee on Smoking and Health; as Chairman of the Dade County Interagency Council on Smoking and it is as a Councilor-at-large for the American Thoracic Society, and as a very frequent traveler on air planes and therefore subjected to clouds of cigarette smoke that cause me respiratory distributed in physician who has seen many, many people complain bitterly of cigarette smoke on air planes them marked respiratory distress which they could not avoid or do anything about. I therefore the very strenuously to cause all public air lines to set up separate smoking compartments or that are air-conditioned in such a way so that no smoke will enter the other areas.

d appreciate a notification of a time when I can appear in front of your agency to testify along the lines.

Very respectfully yours

Charles F. Tate, Jr., M.D.
Associate Professor of Medicine

University of Miami School of Medicine Chairman, Florida Committee on Smoking

and Health

Chief of Chest Disease Section

Jackson Memorial Hospital Miami, Florida 33136

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FLORIDA MEDICAL ASSOCIATION

Subject: Separate Compartments for Smokers on Public Air Transportation.

Whereas, It is a well known fact that smoking causes serious lung disease and is especially harmful to people who have any form of allergy or asthma, and

Whereas, Many people with asthma use public transportation and particularly when they are on planes are unable to leave the plane to avoid the cigarette smoke, thus being captive in a situation that frequently causes severe respiratory disease, and

Whereas, The Federal Aviation Administration is now holding public hearings regarding provision of separate compartments for smokers, therefore be it

RESOLVED, That the Florida Medical Association go on record as urging very strongly that the Federal Aviation Administration require all public air transportation suppliers to segregate smokers to minimize air pollution.

This Resolution # 70-34, was passed unanimously on May 10, 1970, by the Florida Medical Association and on May 5, 1970, by the Dade County Medical Association.



DLORADO 80206

1600 RACE STREET

(303) 388-4327

June 22, 1970

Association

Federal Aviation Administration General Counsel's Office 800 Independence Ave. S.W. Washington, D.C. 20590

ATTN: Rules Docket, GC-24, Notice 70-14

Gentlemen:

The Colorado TB and Respiratory Disease Association wishes to acknowledge and endorse the Federal Aviation Administration's proposal which would require all commercial airlines to have a non-smokers section. It has been estimated that annually more than 300,000 people die from diseases associated with smoking. An estimated 11 billion dollars is lost to the American economy because of cigarette deaths, diseases, and lost workdays.

TB and Respiratory Disease Associations, state and local, following the lead of our parent organization, The National Tuberculosis and Respiratory Disease Association, have as one of their major program goals, "the elinimation of cigarette smoming". The reason for this priority is the close statistical association between smoking and respiratory conditions such as chronic bronchitis and emphysema. According to Dr. Edward A. Gaensler, Professor of Surgery, Boston University, School of Medicine, emphysema will be responsible for the deaths of 20 million workers. The most important aspect in preventing this disease is to educate adults to become non-smokers and children never to start the habit. To this end, the Federal Aviation Administration's proposal would be a positive decision. For too long, the public has acquiesced and considered smoking as a socially accepted form of behavior. It is no longer, when by this behavior, it infringes upon the rights of a growing non-smoking population, many of whom have pre-existing respiratory conditions which make them highly sensative to cigarette smoke.

Since 1964 and the Surgeon General's Report, more than 21 million Americans have become non-smokers, they as well as millions who have never had a tobacco addiction, as well as children who deserve a good example, should have a choice when riding commercial aircraft.

Tailing of Flatin more...

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over . .

1th John R.Durrance, M.D. Hiss Caroline J. Hobson Mrs. P.R. Horsen Mrs. Thomas Leaster Me. Popula D. Tesles

Federal Aviation Administration June 22 Page 2

As responsible citizens representing agencies and associations making what we hope to be responsible decisions for the health and welfare for all people, it behooves the Federal Aviation Administration to consider the rights of the growing non-smoking population in their right to breathe clean, non-polluted air.

Sincerely yours, ·

Ronald D. Engler Executive Director

RDE:dh

cc to: ASH, 2000 H St. N.W., Wash. D.C. 20006
Honorable Donald G. Brotzman - Member of Congress
Honorable Peter H. Dominick - U.S. Senator
Honorable Gordon Allott - U.S. Senator

ILLINOIS INTERAGENCY COUNCIL ON SMOKING

264

AND DISEASE

Dear Sir:

1440 WEST WASHINGTON BOULEVARD, CHICAGO, ILLINOIS 60607. 243-2000

June 8, 1970

m Cancer Society nois Division, Inc. of Oral Surgeons

Dental Society

Heart Association

Medical Society

earch Foundation inois Academy of

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Department of Public Health

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OFFICERS

pel G. Shaw, M.D. Chairman

L. Parsons, M.D. Co-Chairman

> John E. Egdorf Secretary

Elsie M. Sheets ecutive Secretary RE: Dockets Nos. 10012, 10033 Notice 70-14

The Illinois Interagency Council has as one of its objectives the attainment of a healthy adult population as free as possible from lung cancer, arteriosclerotic heart disease, chronic bronchitis and emphysema, the increasing incidence of which is related to the inhalation of tobacco smoke. Accordingly, our Council gave particular attention to the "Advance Notice of Proposed Rule Making" pertaining to smoking on commercial air lines.

Private citizens have recently introduced petitions to the Federal Aviation Administration to amend sections of the Federal Regulations. The first petition, filed on December 12, 1969 allegedly by Mr. Ralph Nader, would "ban the smoking of cigarettes, cigars, and pipes on all passenger flights." The second, filed on December 17, 1969, and probably by Mr. John Banzhaf, would merely segregate smokers and non-smokers.

Though many of our members favored the stronger petition to ban all smoking from passenger lines, the final consensus of our Council was that this is not practical or feasible. Therefore, the Illinois Interagency Council supports the petition that, if adopted, would require "all domestic air carriers to effectively segregate smoking passengers from non-smoking passengers." Segregation should be accomplished if possible by partition or at least by separation. Unregulated smoking on air lines creates a clear and present danger to the safety, health and lives of many with allergies or other pre-existing medical problems, particularly those with cardiovascular or pulmonary abnormalities.

Trans World Air Lines has already voluntarily separated non-smokers and smokers on its Boeing jumbo 747 jets as of March 18, 1970.

This Council coordinates and helps its member agencies combat the serious health hazards of smoking and provides liaison with the National Interagency Council on Smoking and Health.

167

ederal Aviation Administration ine 8, 1970 ige - 2 -Ther companies, such as Pan American World Airways and American Airlines, are planning to provide similar service on a portion of their flights. We feel strongly that the Federal Aviation Administration should amend its regulations so as to guarantee the health, safety and comfort of all passengers who do not desire to subject themselves to the detrimental insults of tobacco moke from the habit of a minority. La conclusion we recommend amending Parts 121, 123, 127 and 135 of the lederal Aviation Regulations to provide for the segregation of all smokers and non-smokers by partition on all passenger flights under FAA jurisdiction. Sincerely yours, rothere C. BRK Rothwell C. Polk, M.D., F.A.C.S. Chairman RCP:ram Federal Aviation Administration Office of the General Counsel *Attention: Rules Docket, GC - 24 800 Independence Avenue, SW Washington, D.C. 20590

AVAILABLE bound volume

RI-COUNTY RESPIRATORY HEALTH ASSOCIATION, Inc.

The Christmas Seal Agency 117 HAWLEY STREET, BINGHAMTON, NEW YORK 13901

PLESIDENT EXECUTIVE DIRECTOR Robert L Brandt

Federal Aviation Administration General Counsel's Office 800 Independence Avenue S.W. Washington, D. C. 20590

Attn: Roles Docket DD-24, Notice 7 - 14

We are indeed encouraged that the rights of the non-smoker as well Gentlemen as those of the smoker are to be given consideration. Since nonsmokers are in the growing majority, and on public airlines, are constantly forced to inhale the second-hand smoke produced by smokers, we wholeheartedly endorse the proposal by Mr. John F. Banzhaf III, in which he seeks to make airlines provide separate sections for smokers and non-smokers.

Studies have indicated that the incidence of respiratory disease among youngsters in households where one or both parents are smokers are markedly higher than in non-smoking households. This would indicate that the inhalation of smoke in a pressurized cabin for a sustained period of time poses a health hazard that is a definite violation of the rights of the non smoker.

In addition to the health-hazard factor, any non-smoker caught in a cross-fire between two smokers on a six or seven hour flight can testify to the fact that such a flight can be an eye-stinging, stifling, and decidedly unpleasant experience.

Our Association urges that every consideration be given the the measures proposed by Mr. Banzhaf.

Respectfully

Executive Director

Just Carring

of Broome, Delaware and Tioga

llas Area Tuberculosis Association

ROCKW 922

Mr. James Rudolph, Director Flight Standard Service Federal Aviation Administration Office of the General Council Attention: Rules docket, GC-800 Washington, D.C. 20590

Department of Transportation, Federal Aviation Administration (14 CFR parts 121, 123, 127, 135)

Smoking on aircraft operated by air carriers, air travel clubs and commercial operators.

Dear Sir and Gentlemen:

As chairman of the Dallas Area Tuberculosis Association's committee on Smoking and Health, I, as well as the members of this committee, agree with the petitioner or the petitioners on file with your committee who urge that there be absolutely no smoking on aircraft operated by air carriers, air travel clubs and commercial operators.

The literature referred to in advance notice of the proposed rule making as appears on pages 1 and 2 of the Federal Register, 35FR5045 on March 25, 1970, apparently sets out an effective argument against smoking the combusted tobacco product.

To this information, we would like to add additional recent evidence which demonstrates impairment of oxygen release from the hemoglobin of red blood cells by a substance present in cigarette smoke.*

It is well known by Respiratory Disease physicians that persons with sensitive airways experience respiratory distress when exposed to cigarette smoke in the environment. Children are especially vulnerable to this effect. Must they be subjected to this health hazard in the confines of the nation's airliners?

We will appreciate your help in a "Clean Air Campaign" vital to all Americans. It's a matter of life and breath.

Sincerely,

Faul L. Richburg, M.D., Chairman

Paul L. Richburg, M.D., Chairman Smoking and Health Committee Dallas Area Tuberculosis Association

PLR: la

*Eliot, R. S., et. al. "Non-Carbon Monoxide Effects of Smoking on Hemoglobin-Oxygen Transport," American Journal of Cardiology, V. 25, p. 93, Jan 1970.

P25 MAPLE AVENUE DALLAS, TEXAS 75219 LAKESIDE 1-2183 IT Christmas Seal Association Fights Tuberculosis, Emphysema and other Chest Diseases

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Washington Sanitarium and Hospital

7600 CARROLL AVE., TAKOMA PARK, MD. 20012

589-8800

June 22, 1970

Dear sirs:

As director of the FIVE DAY PLAN TO STOP SMOKING sponsored by the WASHINGTON SANITARIUM & HOSPITAL, I feel that it is most imperative that serious consideration should be given the petition to separate smokers and non-smokers on airlines as outlined by ASH. (Action on Smoking and Health)

I have been working with the public for over a score of years with our plan, and we have found it to be highly successful.

Just since January of this year, our clinic has helped 1,000 individuals to "kick the habit."

Bowever, one of the crulest tests that these folk can be subjected to is to be thrown into an environment of a smoke filled room where every one of their senses is being tempted to just break down and take "one more smoke." And then of course, that's all it takes to off again and into the habit.

Many of these individuals have had to stop smoking for serious health reasons. And of course, this also affects many allergic folk who have never smoked.

We believe that the only answer is to separate the smokers and the non-smokers completely with a petition there somewhere to block the smoke off.

I respectfully request that in the further interest of the public health and welfare, that this action may be adopted, to be effective as soon as possible.

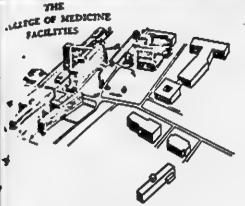
Sincerely,

A.C. Marple

ACM:evs,

KENNETH H. COOPER. M. D. LIBUTERANT COLONEL U.S.A.F. MEDICAL CORTE 310 DESPIRATION DRIVE BAN ANTONIO, TREAS 78128 14 July 1970 rederal Aviation Administration Office of the General Counsel Attention: Rules Docket, 23-24 200 Independence Avenue, 3.4. Washington, D.C. 20590 Recently on a non-stop flight from Fortland, Cregon to Dallas, Texas, I was asked to attend an elderly can who Gentlemen: had gone into acute respiratory distress shortly after our aircraft had reached its cruising altitude. The man suffered from severe nulmonery emphysema and a combination of hypoxic factors led to his rapid deterioration. Ine of these factors probably was hyperic hypoxia resulting from dense cigarette smoke Within the sircraft cabin. Fortugately, he responded Well to oxygen by mask and a costly and time-consuming emergency landing was avoided. his case brings up again the problem of cigarette smoking on board commercial aircraft. I feel that it is a personal infringement on my rights and the rights of all non-smokers since we do not have an alternative if we do not wish to inhale the sighly polluted air. Following the patterns now being established in 747 flights, I feel that as a minimum. designated areas should be set eside for smokers on board all types of aircraft. Ultimately, I would hope to see smoking As one vitally interested in the practice of preventive banned on all flights. medicine, I would like to go or record urging for rules or legislation that would ban all smoking on aircraft operated by concercial air carriers. Sincergly. limite Kenneth K. Cooper, Z 24 34 70 NEC/EC AVAILABLE bound volum





June 19, 1970

DODD HALL
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UNIVERSITY HOSPITAL
UPHAN HALL
WISENAN HALL
WISENAN HALL
WISENAN HALL
HOOME WEST 10TH AVENUE
COLUMBUS, OHIO 43210

Federal Aviation Administration General Counsel's Office 800 Independence Avenue, S.W. Washington, D.C. 20590

Gentlemen:

As a specialist in lung diseases and a medical teacher, I would like to support the proposal which has been made regarding Rules Docket, GC-24, Notice 70-14.

It is perfectly obvious that the millions of people that have various sorts of lung diseases should not be exposed to tobacco smoke in enclosed spaces. This is injurious, produces an excess of unnecessary symptoms, and contributes to disability.

In addition to the above, no individual, whether suffering from lung disease or not, should be required to undergo the annoyance and aggravation of compulsory smoke inhalation in a plane. I therefore trust that these two significant facts will receive due consideration from you in your final decision.

It appears to me that no matter whether the public demand or complaint level is high or low from your viewpoint, the facts are clear and should be the determining factors rather than how many letters or appeals you may have received.

Very truly yours,

R. H. Browning, M.D.

Professor of Medicine (Pulmonary Diseases)

RHB:cc

c.c. A.S.H.

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ESCAMBIA GENERAL HOSPITAL 1200 West Leonard Street PENSACOLA, FLORIDA

of Trustees
et P. Gaines
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et R. Gillette
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e E. Williams, M.D.

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May 19-70

FEDERAL AVIATION ADMINISTRATION Office of the General Counsel Attention Rules Docket, GC-24 800 Independence Avenue, SW Washington, D. C. 20590

Re: Dockets #10012, 10033; Notice 70-14
Smoking on Aircraft

Dear Sir:

At the present state of aircraft ventilation on commercial airlines it is impossible to remove the offensive substances produced by smoking of tobacco products. It is very difficult for the non-smoker to have to sit for a prolonged period of time as required in the average flight and be choked constantly by these noxious fumes. In certain cases, for example, primary allergy to cigarette smoke, it is medically detrimental to be forced to breath in a smoked filled aircraft.

In a recent flight, surrounded by smokers, I was faced with the problem of trying to breath, under such conditions as stated above. It is my opinion that it is the right of the majority (the non-smokers) to not have to breathe these noxious substances.

My conclusions are that at the present time the non-smoker has no relief from the annoyance and probable harmful effects of enhaling tobacco smoke in the close environment that one finds himself in on an aircraft cabin. Although, simply separating the smoker from the non-smoker may alleviate the situation somewhat, it seems to me that either smoking should be prohibited, or the ventilation systems of aircraft should be greatly improved.

Respectfully submitted,

14 : 8 : 15 L

K. I. Holman, M. D.

KIH/ir

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MOUNT SINAI SCHOOL OF MEDICINE

of The City University of New York .

FIFTH AVENUE AND 100TH STREET- NEW YORK, N.Y. 10029



Department of Community Medicine

May 29, 1970

Federal Aviation Administration General Counsel's Office 800 Independence Avenue, S.W. Washington, D.C. 20590 Attn: Rules Docket GC-24, Notice 70-14

Dear Sir:

It has come to my attention that the Federal Aviation Administration is considering a rule which would require separate smoking and nonsmoking sections aboard all aircraft. I would strongly urge this requirement for health purposes.

During the past seven years, my colleagues and I in the Environmental Sciences Laboratory of the Mount Sinai School of Medicine, have been investigating serious health hazards associated with inhalation of asbestos fibers. During this time, we have made an observation which bears directly upon the matter you are considering.

I am enclosing a reprint of a paper published in the Journal of the American Medical Association in 1968, which details our findings. Briefly, they indicate that there is an extraordinary effect of the inhalation of cigarette smoke among individuals who also have asbestos in their lungs. Thus, while it is known that people who inhale asbestos have a tendency to die of lung cancer, our studies have demonstrated that this unhappy fate is largely limited to people who also smoke cigarettes. Of 87 old-time asbestos workers who did not smoke cigarettes, and observed from 1963 to 1967, none died of lung cancer. On the other hand, of 283 of their coworkers, equally long in the trade, who did smoke cigarettes, 24 died of lung cancer, although only 2 or perhaps 3 were expected to, on the basis of their cigarette smoking habits. The combination, apparently, is a very bad one.

A second, very much related, problem is the fact that asbestos air pollution is now becoming common, the fibers being derived from a variety of industrial sources. Information concerning this can be obtained from the National Air Pollution Control Federal Aviation Administration

May 29, 1970

Administration, in some detail. In New York City at this time, our studies have demonstrated that practically every adult who comes to postmortem now has asbestos in his lungs. The number of fibers generally is quite small. Our concern is that this small number — unlikely to cause much trouble by itself, will carry a special risk in the concurrent presence of cigarette smoke.

Therefore, I suggest that it is reasonable to advise that

people have the option of not inhaling cigarette smoke, wherever
possible, since most of us already have asbestos in our lungs,
fibers which will reside there permanently. Even if the asbestos industry develops adequate industrial hygiene precautions
to avoid significant further contamination of urban air - and
I think they will - the contamination over the previous several
decades is already within us. This we cannot avoid. Therefore,
we should avoid what we can - the inhalation of cigarette smoke.

This is a matter of considerable public health importance which, I believe, warrants the most serious consideration. Should you be interested in further information on this aspect of the question, I should be happy to meet with you.

Sincerely yours,

Irving J. Selikoff, B.
Professor

IJS:sa



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION GEORGE C. MARSHALL SPACE FLIGHT CENTER MARSHALL SPACE FLIGHT CENTER. ALABAMA 35812

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June 1, 1970

MRY TO

Mr. J. F. Randolph Director, Flight Standards and Safety Federal Aviation Administration 800 Independence Avenue, S. W. Washington D. C. 20590

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Dear Mr. Randolph:

In response to recent requests by the Federal Aviation Administration relative to the possibility of eliminating smoking on commercial aircraft, I would like to make a statement supporting this change of policy as follows.

Since it is now well established that the gases and particulates in tobacco smoke act definitely toward injuring the health of whoever breathes them be he smoker or non-smoker; and furthermore, since the interiors of the aircraft are demonstrably not sufficiently well ventilated as to isolate the effluvia from the smoker to only his immediate vicinity, it would seem that either smokers should have a special compartment for indulging in this vice or, that smoking should simply be eliminated in the interest of passenger health and comfort—the latter probably being the most practical alternative. Moreover, many passengers — possibly a majority now — simply find tobacco smoke unpleasant and resent the stench which it imparts to their clothing.

A second matter concerning public health and air pollution on commercial aircraft is the situation where aircraft awaiting clearance for take off frequently suck up each other's engine exhaust and subject the encapsuled passengers to poisoning in what is nothing less than aperiod—in a well designed gas chamber for durations up to an hour or more in the large airports.

When delays are encountered in securing take off clearances (such as frequently occur in Washington and New York due to weather) it is certainly not necessary that the aircraft continue to run their engines throughout the delay. Rather, whatever the requirement may be, if any, that recommends the running of engines on the ground for protracted periods before take off, this period certainly need not exceed the time interval which an aircraft is on the ground taxiing prior to take off during unobstructed situations. This warm up preparations of engine fitness testing period is certainly not in excess of 10 minutes. Yet I have been subjected to gas chamber episodes extending beyond one half hour.

DEFICE OF THE CANASEL

I recommend that in situations where aircraft are parked awaiting take off that planes need not continually move up closing the gap in the line of queued aircraft but rather, when a plane becomes the 2nd or archieving the necessary warm up), rather than run them continually. Does not such a procedure strike you as being in the best interest of passenger health and economy?

Sincerely

Daniel Payne Hale, Ph. D.

UNIVERSITY OF Minnesota

DIVISION OF CHILD PSYCHIATRY

BOX 95 MAYO MEMORIAL BUILDING - MINNEAPOLIS, MINNESOTA 55455

June 3, 1970

Federal Aviation Administration Rules Docket GC-24 800 Independence Avenue Southwest Washington, D.C. 25090

Dear Sirs:

It has come to my attention that there is now serious consideration being given to whether or not smoking should be allowed on commercial airliners. As a physician, I would like to express my opposition to cigarette smoking. It is not the only cause of lung cancer, but it is the most important cause that we know about. It has been estimated that the elimination of cigarette smoking would eventually reduce lung cancer to perhaps 25% of the present incidence.

Although the short-term exposure to cigarette smoking that results from a several-hour flight is probably not important in terms of contributing to lung cancer, it does aggravate other chronic pulmonary conditions. Several patients have complained about this. I am a frequent commercial traveler and have noted that the overhead ventilation jets seem to be ineffective in dispelling the smoke because it diffuses throughout the cabin of the plane.

Therefore, regarding Docket Numbers 10012 and 10033, notice number 70-14; I am completely opposed to smoking by passengers while in an aircraft.

Sincerely,

Michael Koch, M.D.

MK/bsn

HEALTH SCIENCES CENTER
MEDICAL SCHOOL

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APPENDIX C

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STOVICE

CC Air inc

MUNICIPAL AIRPORT - GRAND ISLAND, NEBRASKA 68801 - PHONE (308) 382-5770 - P. O. BCX 17

May 26, 1970

Federal Aviation & Adminstration Office of the General Council 900 Independence Avenue S.W. Washington, D.C. 20590

Dear Sirs:

As both a passenger on Commercial Airlines and a fixed base operator, I would heartily like to endorse and urge you to prohibit smoking on aircraft operated by Air carriers, Air Travel Clubs, and Commercial Operators. As a passenger, I can say that the smoke is not only nauseating and uncomfortable it is also a detriment to the health of the people that are breathing it.

As a pilot, I can furthermore say that on a Charter trip with close quarters in a cabin of a six or eight place aircraft the passenagers inevitably smoke themselves to death and the pilot is not only faced with the problem of putting up with the smoke but the bad air that is caused by it causes great discomfort to the pilot especially flying at high altitudes. Not only do these things contribute to the aircraft operators problems; but the smoke and nicotine tars as you well know contribute greatly to the inefficiency of vacuum gyro systems.

Sincerely,

Exec Air, Inc.

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June 21, 1970

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Federal Aviation Administration Office of the General Counsel Attn: Rules Docket, GC-24 800 Independence Ave., S. W. Washington, D.C. 20590 -

and the state of t Re: Docket Nos. 10012, 10033 an a market intervation.

Dear Sirs:

I wish to comment about the proposed rule making regarding Smoking on Aircraft both as an airline crewmember and frequent passenger.

Smoking in the cockpit can not only be bothersome but can adversely affect the maximum capability of the flight crew to safely perform their duties. It raises the carbon monoxide level in the blood, (American Medical Association Committee on Medical Aspects of Auto Injuries and Deaths) which induces drowsiness, not a good state to be in while making an instrument approach in marginal weather conditions.

The quantity of smoke in the cockpit can be enough to cause smarting of the eyes. I have had watery eyes on several occasions while shooting an instrument approach at night when optimum vision and reflexes are essential. The smokers include FAA personnel riding jump seat, cockpit crewmembers and to a suprisingly large extent, stewardesses. An increasingly large number of pilots including myself object to this dirty habit both from a personal standpoint and from its effect on cremember operating efficiency. and the second of the second

I propose that smoking in the cockpit either be more restricted or banned entirely. the agreement market are in its especies by

From the point of view of a passenger, smokers and non-smokers should be separated on all aircraft, instead of just the Boeing 747. Preferably an inexpensive curtain could be installed to divide bothe coach and first class into sections, or such sections could be designated without a curtain.

Certainly everyone is entitled to breathe fresh air on a public transportation facility. The present system is highly unsatisfactory to many.

Sincerely yours,

1853 4 55 M. 10 Frank S. Haris

State Commencer, American Airlines

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P. C. Dox BD Williamsburg, Virginia 23185 June 17, 1970

deral Aviation Administration Tice of the General Counsel A Pules Docket, GC-24. O Independence Ave., S. VI. shington, D. C. 25090

In response to your invitation to comment on your advance notice of gar Sir: Wemsking concerning "Smoking on Aircraft Operated by Air Carriers, Air ravel Clubs, and Commercial Operators, (Docket Nos. 10012 and 10033; otice No. 70-14) I would like to comment first as an Hir Line Captain.

I do not agree with you that there is no hazard involved in smoking aboard aircraft. I dare say there is no Airline Captain alive who has not had a passenger fall asleep while smoking and as a result either burn his own clothing or lose a lighted digeret down behind the seat. When this burning odor is smelled in the cockpit, an emergency is created which must be dealt with. With liquor being served routinely, ressongers are now more careless than ever with their digarets.

Then there is always the jump scat rider, be he company check pilot, FAA, or deadheading crew member who must smoke. There is no way for one occupant of the cockpit to smoke without seriously bothering the other pilots. That in itself is a safety hazard.

Any malfunction of the pressurization system should be called a safety hazard on today's high altitude aircraft. Ask any medianic to Show you valves in an aircrafts pressurization system that have been •guaned up so much with nicotine that they no longer function properly.

* As a passenger I am worried about my lungs being gurmed up just as

those valves are. Aside from the invisible health hazard caused by other peopleb * smoking, there is the annoyance of being forced to breathe smoke with its constant irritation to eyes and nose with no chance to escape. No Windows can be opened as on other modes of transportation.

Please give us relief from this hazard. Give us a total ban on smolding aboard aircraft by passengers and crew.

Cher & Derracol Chas. R. Darracott

Mir Line Captain : 2264 1124

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Wright

LAND & SEAPLANE • SPECIALTY FLIGHTS

PHOTOGRAPHY
INSTRUCTION
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• " 626-4251 p. O. BOX 7159 port worth. Texas 76111



Hr. James F. Rudolph Director, Flight Standards Service Dept. of Transportation, FAA Washington, D.C. 20590

Dear Mr. Rudolph:

In my thirty continuous years in aviation, this is my first correspondence regarding any rule making. I relate this to you to emphasize the strong feelings I have in opposition to smoking on aircraft.

I am presently flying professionally as Captain for a major trunk carrier operating the largest four-engine jets. I do not name the company, as I am not speaking for them or for the Air Line Pilots Association, of which I am a member of the Board of Directors.

I own and operate two civil aircraft aboard which I do not allow smoking. Sad experience with malfunction of flight instruments contaminated by nicotine tar, added overhaul expense, fire hazard, and downright nuisance to passengers, other than the smoker, prompted me to post the "No Smoking" signs.

It is even a matter of morals and common sense that no no access to a breath of clean air.

I am an ex-smoker and not a "do-gooder", but the non smokes acree from inconsiderate tobacco users for too long.

Le, mark me down as 100% in favor.

Sincerely you

Marion H. Wright

N/L

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June 21, 1970

J. 10 21, 1 6

Pederal Aviation Administration Office of the General Counsel Attn: Rules Docket, GC-2h 800 Independence Ave., S. W. Washington, D.C. 20590

Re: Docket Nos. 10012, 10033

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I propose that smoking in the cockpit either be more restricted or banned entirely.

From the point of view of a passenger, smokers and non-smokers should be separated on all aircraft, instead of just the Boeing 747. Preferably an inexpensive curtain could be installed to divide bothe coach and first class into sections, or such sections could be designated without a curtain.

Certainly everyone is entitled to breathe fresh air on a public transportation facility. The present system is highly unsatisfactory to many.

Sincerely yours,

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Frank S. Harris

TRAVEL . MAIL . S.F.

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Frank Harris 2821 Buffalo Court ENAMES . TE

P. O. Pox BD Williamsburg, Virginia 23125 June 17, 1970

deral Aviation Administration fice of the General Counsel A Rules Docket, GT-24 O Independence Ave., S. W. shington, D. C. 25090

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* As a passenger I am worried about my lungs being gummed up just as those valves are.

.Aside from the invisible health hazard caused by other peoples smoking, there is the annoyance of being forced to breathe smoke with *its constant irritation to eyes and nose with no chance to escape. No windows can be opened as on other modes of transportation.

Please give us relief from this hazard. Give us a total ban on smoking aboard aircraft by passengers and crew.

Very truly yours,

Mir Line Capta

22641124

RD 2, Walnut Ave. Mt. Holly, N.J.,08060 18 June 1970

Federal Aviation Administration Office of the General Counsel Attn: Rules Docket GC-24 800 Independence Ave. SW Washington, D.C., 20590

I feel that exposure to smoke does reduce the mental alertness, and therefore effects quick thinking, and efficiency, of those subjected to smoke. This affects me as a nonsmoking crewmember. Certainly at the end of a long trip, after much smoke, a crewmember is not as alert for a possible approach right down to minimums, and landing as if there had been no smoking.

Without having specific details, I recall several instances of equipment malfunctions, such as radios and pressurization, in which maintenace people have pointed out that résidues of smoking did contribute to the failures. It is usually obvious which hole in the airplane is the outflow valve and which is the relief valve by the amount of contamination surrounding it. Radio failures were attributed to dirt, including cigarette smoke, in the switches for channel selection.

In conclusion, I would prefer total abstinence but would accept any means of people and aircraft components from ill effects of smoke.

Yours truly,

Douglas A. Arnold
ATR 1627119

Jei 2: 11:17:11 10

906 South Oak Street Arlington, Virginia 22204 19 June 1970

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deral Aviation Administration fice of the General Counsel tention: Rules Docket, GC-24 10 Independence Avenue, S.W.

ote: Ref. Dockets Nos. 10012,10033; Notice 70-14

ar Mr. Rudolph and Others to whom it may concern:

I feel it both a matter of personal desire and public duty to make voice heard on this matter of whether or not smoking should be probited or in some measure restricted aboard commercial and air carrier ireraft as per Proposed Rule Making Notice No. 70-14. I speak from the iewpoint of both passenger and flight deck crew member of a major U.S.

May I speak first as a cabin passenger: Notwithstanding the fact ir carrier. at smoking of any kind by reasonable, healthy, and polite men and men is in fact a most irrational, unhealthful, and discourteously insiderate practice; and since the authors of this Notice rather skillly and for all practical purposes ruled out the the smoking factor as ossible safety hazzard in the PASSENGER CABIN, it would seem rather less for me to decry the annoyance, the inconsideration, and the sical irritation the non-smoking air line passenger is subjected to ce such legislation -- in the realm of passenger comfort -- is in fact of the scope of the purposes and charter of the FAA whose primary, not singular function, is to assure the safety of the air traveling blic and let the air line see to his comfort.

So, let me simply say that as a passenger, yes, I certainly would ke, nonetheless, to see smoking aboard public air transport aircraft ohibited at all times for the personal reasons that I have mentioned - xove. Secondly, I am by no means so easily persuaded that smoking is ot in fact a real safety hazzard even in the passenger cabin, such as bring a rapid decompression and the resulting oxygen use or the fire tazard of the cigarette in the trash can or the smoker who falls asleep at his seat, etc., ad infinitum. However, at present, pending the results of the studies of the health hazard related to the smoke in the aircraft cabin, I must concede that there is little material evidence to justify regulatory action by the FAA, as far as the passenger cabin is concerned.

However, when I speak as a flight deck crew member (presently as a

First Officer of the DC-9 for EASTERN Air lines, and formerly so on the CV-440 and the L-138), it is entirely a different story; for SAFETY is

the major consideration of my comment.

Maybe a brief example would best make my point: During a not untypical day's flying, say the Captain and I went on duty at 7 o'clock that morning, and it has been a long day of flying all over the eastern United States with over six hours of ectual flying time locked in the cockpit of a DC-9 with a Captain whose smoking is all but continuous and which has given me a throbbing headache hours ago. And now it is 8:30 pm and my leg to fly as we approach Syracuse on a typical winter night complete with CAN SHE SE THE SERVE

HALL FLYING SCHOOL

lowest minimums for the field, all the result of a turbid winter torm. As we are vectored for the 28 IIS, I am already experiencing the torm. As we are vectored for the 28 IIS, I am already experiencing the torm. As we are vectored for the 28 IIS, I am already experiencing the torm. As we are vectored for the long day, only to have it unnecessarily promal fatigue factor of the long day, only to have it unnecessarily ompounded by a deep headache, burning eyes and nasal passages, and low ompounded by a deep headache to finish be number of the cockpit (which simply CANNOT be purged to ke-filled atmosphere of the cockpit (which simply CANNOT be purged to ke-filled atmosphere of the cockpit (which simply CANNOT be purged to ke-filled atmosphere of the cockpit (which simply CANNOT be purged to ke-filled atmosphere of the cockpit (which simply CANNOT be purged to ke-filled atmosphere of the cockpit (which simply CANNOT be purged to ke-filled atmosphere of the cockpit (which simply CANNOT be purged to ke-filled atmosphere of the cockpit (which simply CANNOT be purged to ke-filled atmosphere of the cockpit (which simply CANNOT be purged to ke-filled atmosphere of the cockpit (which simply CANNOT be purged to ke-filled atmosphere of the cockpit (which simply CANNOT be purged to ke-filled atmosphere of the cockpit (which simply CANNOT be purged to ke-filled atmosphere of the cockpit (which simply CANNOT be purged to ke-filled atmosphere of the cockpit (which simply CANNOT be purged to ke-filled atmosphere of the cockpit (which simply CANNOT be purged to ke-filled atmosphere of the cockpit (which simply CANNOT be purged to ke-filled atmosphere of the cockpit (which simply CANNOT be purged to ke-filled atmosphere of the cockpit (which simply CANNOT be purged to ke-filled atmosphere of the cockpit (which simply CANNOT be purged to ke-filled atmosphere of the cockpit (which simply CANNOT be purged to ke-filled atmosphere of the cockpit (which simply CANNOT be purged to ke-filled atmosphere of the cockpit (which simply CANNOT

Well, now, let me ask you quite bluntly, can such a situation as I well, now, let me ask you quite bluntly, can such a situation as I ust described possibly be conducive to the optimum safety of such a light ?? Could I or any other non-smoker possibly be performing at my light ?? Could I or any other non-smoker possibly be performing at my best-and SAFEST-- under such said conditions?? I believe the many best-and safety answer is an obvious NO!!! And may I add that the flight described also not fictitious, but one of many similar trips I have had the displeation of logging over my relatively few years of air line flying.

Is it any wonder, then, that I personally make every effort to Is it any wonder, then, that I personally make every effort to good the smoking Captain as I bid my trips: it is more than just a stater of personal comfort or possible long-range health hazard, it is matter of the immediate SAFETY of the entire aircraft and all aboard. For I know that my performance as a pilot, under whatever other normal for I know that my performance as a pilot, under whatever other normal fatigue factor, cannot possibly be my best when I am forced to perform the possibly be my best when I am forced to perform the possibly be my best when I am forced to perform the property of the performance as a pilot, which has become nothing less than a smoke them the property of the performance as a pilot, when I am forced to perform the property of the performance as a pilot, when I am forced to perform the property of the performance as a pilot, when I am forced to perform the property of the performance as a pilot, when I am forced to perform the property of the performance as a pilot, when I am forced to perform the property of the performance as a pilot, which has become nothing less than a smoke the property of the performance as a pilot.

In short I am saying that all good judgement and consideration for the safe conduct of the flight demands that smoking be totally banned at least in the flight deck of all U.S. commercial and air carrier airgraft. Such smoking is a safety hazard in every sense of the word:

Toank you very much.

Sincerely yours,

Charles E. HUFF, F/O EAL

ATR 1551010

.Federal Aviation Administration

Office of the General Counsel

Attention: Rules Docket, GC-24

800 Independence Ave. S.W.

Washington, D. C. 20530

Re: Proposed amendments to parts 121, 123, 127, 135 - docket nos. 10012, 10033; notice 70-14

Dear Sir,

As a flight crewmember and occasionally a passenger in air carrier aircraft, I would like to state my opinion regarding further restriction of smoking aboard aircraft.

I think smoking should be prohibited in all aircraft under the above parts, unless the aircraft has a separate, fireproof compartment in which people may smoke. Tobacco smoke is very annoying to non-smokers, besides being a health hazard, and keeps people from enjoying an otherwise pleasant flight.

The safety factor is very important. I know that aircraft interiors are built with fireproof, or at least fireresistant materials, however the clothing of the passengers
are not. I fly for a commuter airline and our flying is done
below 10,000 ft. where, the chance of turbulance is greater.

In turbulance it is possible for someone to drop a lighted
cigarette onto his clothing. If it drops to the floor and he
has his seat belt on, as he is supposed to, he would not be
able to reach it.

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Our planes have no separate crew compartments, as such, so e have to breathe the smoke of passengers directly behind us. t is both annoying and distracting.

Also a danger exists with cigarette lighters. I had an incident occur in a private plane where my passengers lighter exploded at an altitude of 8500 ft. Fortunately he snuffed the exploded at an altitude of 8500 ft. Fortunately he snuffed the fire out with his hand. I would venture to guess that a great many people would have dropped it. However, it was distracting and, since it occurred at night, didn't do my night vision any good.

Nost flights on commuter or regional carriers are less
than one hour and I don't think that is too long to go without
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have aircraft large enough so that separate compartments
have aircraft large enough so that separate compartments
would not be impractical. They already have separate compart—
would not be impractical. They already have separate compart—
ments for first class and tourist; and all that does is separate people by how much they paid for a ticket.

Aboard an aircraft there are three basic causes of fire: fuel, electrical and smoking. We cannot operate an aircraft without fuel, nor very efficiently without an electrical system, but it will operate very well without smoking.

Sincerely, S. Blade

UNITED STATES DISTRICT COURT FOR THE DISTRICT OF COLUMBIA

RALPH NADER, et al.,

Plaintiffs,

7.

Civil Action

FEDERAL AVIATION ADMINISTRATION, et al.,

No. 1535-70

Defendants.

PLAINTIFFS' OBJECTIONS TO AMENDED PROPOSED ORDER

The proposed order states, inter alia

* * * that there is rational basis in the record for the defendant Administrator's determination in this matter * * *

It is our understanding of the ruling in open court that
the basis for the decision in this case was the Court's
determination that the Administrator had alleged facts
which, if correct, would justify his decision and that it
was not the province of the Court to weigh these alleged
facts against the facts submitted by plaintiffs to
determine whether they were accurate. For instance the
Court declined the invitation of plaintiffs to compare
allegations that the airplane cabin is "well-ventilated"
against the testimony of thousands of travellers and the
evidence from two accidents that when smoke is constantly
produced in the cabin it cannot be cleared by the airplane's
ventilation system. We believe the Court specifically
refused to judge the quality of the Administrator's evidence.

To find that there was "rational basis in the record" for the Administrator's action is a judgment about the evidence and does not accurately reflect the Court's decision.

We therefore respectfully request that the abovequoted phrase in the order be deleted and be replaced by the following:

* * * that the defendant Administrator has alleged facts which, if accurate, would constitute a rational basis in the record for his determination in this matter.

Respectfully submitted,

BERLIN, ROISMAN AND KESSLER Counsel for Plaintiffs

Anthony Z. Roisman

August 28, 1970

Certificate of Service

I hereby certify that a copy of the foregoing Objections was served on counsel for the defendant by delivering a copy to him at his office at Third and Constitution Avenue, N. W., Washington, D. C., on this 28th day of August, 1970.

Anthony Z. Roisman

UNITED STATES DISTRICT COURT FOR THE DISTRICT OF COLUMBIA

Plaintiffs,

Plaintiffs,

Civil Action

V.

FEDERAL AVIATION ADMINISTRATION,

Defendants.

Defendants.

JUDGMENT M. STEARNS

plaintiffs' motion for preliminary injunction and defendants opposition thereto, and on defendants' motion for summary judgment and plaintiffs' opposition thereto; upon consideration of the arguments of counsel, the memoranda of the parties, and the certified administrative record (including the "Statement of Reasons for Determination of No Emergency" submitted under the Court's order of June 26, 1970); and the entire record herein, and the Court being fully informed in the premises; and it appearing to the Court that the defendant Administrator's determination in this matter has a basis in fact and is not arbitrary and capricious and the Court having found that there is no genuine issue

as to any material fact, and defendants are entitled to judgment as a matter of law,

It is by the Court this 28th day of August, 1970.

ORDERED and ADJUDGED:

- 1. That defendants' motion for summary judgment be, and it hereby is, granted;
- 2. That plaintiffs' motion for preliminary injunction be, and it hereby is, denied as moot; and
 - 3. That the action is hereby dismissed.

United States District Judge

A TRUE COPY

ROBERT M. STEARNS, Clerk, Moncobon





IN THE

UNITED STATES COURT OF APPEALS FOR THE DISTRICT OF COLUMBIA CIRCUIT

24,616

RALPH NADER, IRIS CLARK INGRAM, DORIS LIMONCELLI, MRS. HIRAM E. NEWBILL AND HENRIETTA R. WALKER,

Appellants,

V,

FEDERAL AVIATION ADMINISTRATION and HONORABLE JOHN H. SHAFFER, ADMINISTRATOR FEDERAL AVIATION ADMINISTRATION,

Appellees.

On Appeal From a Judgment of the United States District Court for the District of Columbia

BRIEF FOR APPELLANTS

Anthony Z. Roisman
Berlin, Roisman and Kessler
1910 N Street, N.W.
Washington, D.C. 20036

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v.

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Appellees.

On Appeal From a Judgment of the United States District Court for the District of Columbia

BRIEF FOR APPELLANTS

ISSUES PRESENTED

- 1) Whether the Administrator of the Federal Aviation Administration erred as a matter of law in concluding that although he is obligated to provide for the highest possible degree of safety in air travel and although there is no reason consistent with the public interest to continue to allow smoking on airplanes, he may refuse to impose a temporary emergency ban on smoking on airplanes under 49 U.S.C. Section 1485(a) until it has been conclusively proven that smoking on airplanes can cause fire or fire induced smoke, impairment of mental and visual acuity of crew members, and adverse health consequences for non-smoking passengers, particularly those with pre-existing illnesses.
 - 2) Whether upon a showing that smoking on airplanes can cause fire or fire induced smoke, can cause impairment of mental and visual acuity of crew members and can cause adverse health consequences to non-smoking passengers, particularly those with pre-existing illnesses, it was arbitrary and capricious for the Administrator of the Federal Aviation Administration to refuse to impose a temporary emergency ban on smoking on airplanes while he is conducting in-depth studies of these safety hazards created by smoking on airplanes.

STATEMENT PURSUANT TO RULE 8(d)

Preliminary matters have already been considered and disposed of by the Court in this proceeding. Simultaneous with the filing of the record in this case appellants filed a Motion to Advance on the Docket and Expedite based on the emergency nature of the proceedings involved. On September 30, 1970 Chief Judge Bazelon granted appellants' motion and directed the Clerk to set this proceeding down for early argument.

REFERENCES: TO RULINGS

In this proceeding appellants seek review of a determination by the Administrator of the Federal Aviation Administration under the Federal Aviation Act of 1958. This case comes to this Court as a result of the District Court's summary judgment in favor of the Administrator which upheld his refusal on March 25, 1970 (35 Federal 5045-46) to impose a temporary emergency ban on smoking on airplanes. The Administrator's decision which is challenged in this Court is set forth at pp. 207-208 of the Joint Appendix. Supplemental statements of reasons for the refusal appear at pp. 214-216, 220-229 of the Joint Appendix.

STATEMENT OF THE CASE

The Federal Aviation Act of 1958 imposes upon the Administrator of the Federal Aviation Administration the duty to promulgate rules and regulations "to provide adequately for...safety in air commerce" (49 U.S.C. Section 1421(a)(6)) and to fully consider the duty resting upon air carriers to perform their services with the "highest possible degree of safety". To fulfill his obligation to provide for safety, the Administrator is given the authority to issue, upon complaint or otherwise, a temporary regulation without hearing but subject to an immediate hearing after the regulation is issued when an "emergency requiring immediate action exists in respect of safety in air commerce". 49 U.S.C. Section 1485(a).

On December 8, 1969, appellant Nader filed a petition with the

Administrator, pursuant to 49 U.S.C. 1485(a), requesting that within

30 days the Administrator impose a ban on smoking on all passenger carrying commercial aircraft. The request, supplemented by additional

materials on January 12, 1970 and March 10, 1970, was based on evidence,
including numerous scientific articles and accident investigation reports,
which demonstrated that smoking on airplanes created an imminent and
serious threat of fire and fire induced smoke on the airplane, of impairment of mental and visual acuity of crew members, and of deleterious
health consequences to non-smoking passengers, particularly those with
pre-existing illnesses. Appellants Walker, Limoncelli, Ingram and Newbill
intervened in this proceeding on December 24, 1969 also seeking a ban on
smoking on airplanes and stressing in particular their serious physical
reaction to smoking on airplanes which prevents them from travelling by
airplane except in an emergency. (Jt. App. 14-195)

The petition was also supplemented by hundreds of letters from the general public urging the Administrator to act to limit or ban smoking on airplanes and relating personal experiences or scientific evidence which supported the petition. (Jt. App. 196-205, 231-288)

On March 25, 1970 the Administrator published in the Federal
Register an Advance Notice of Proposed Rule Making (ANPRM) in which he
denied appellants' request, denied that smoking on airplanes created any
risk of fire or fire induced smoke and conceded that the health consequences of smoking on non-smoking passengers was part of his safety
responsibility but that he believed the subject required further study.

In this regard he referred to a previously announced study being conducted
by the FAA in conjunction with the Department of Health, Education and
Welfare to study the level of tobacco contaminants in the passenger
compartments of aircraft carrying military personnel. This ANPRM solicited public comment for a period of 90 days on the health affects to
non-smokers of smoking on airplanes and on the propriety of segregating
smokers and non-smokers on airplanes. (Jt. App. 207-208)

Significantly the ANPRM and the denial of appellants' petition were not based solely upon material in the public docket at the FAA. The Administrator on at least one occasion discussed the matter with high officials of the airline industry and presumably received

No comment was made upon data submitted by Appellants relating to the impairment of mental and visual acuity of crew members as a result of smoking on airplanes but in a subsequent document the Administrator did respond to this data (Jt. App. 228)

^{2/} On January 14, 1970 the Administrator stated in his prepared statement delivered to the Northeast Region Aviation/Space Writers Association in New York City:

I have consulted [with respect to the petition involved here], on a personal and unofficial basis, with several airline presidents to get their opinion on what might be a reasonable course to pursue in the public interest.

from his staff an analysis of the scientific data and accident investigation reports submitted with the petition. No record of the private discussions with airline officials or of data obtained from them nor of the analyses of the Administrator's staff or any data upon which they relied appeared in the public docket at the FAA.

As a result of this action by the Administrator the appellants filed on May 21, 1970 the complaint in this proceeding against the Administrator and the FAA. The complaint sought inter alia, an injunction against the appellees to prevent them from refusing to impose a temporary ban on smoking on airplanes. The primary basis for this claim was that the appellees had acted arbitrarily and capriciously and had abused their discretion in denying the petition. 5 U.S.C. 706 (2)(A)(Section 10(e) (2)(A) of the Administrative Procedure Act). Attached to the complaint was a copy of the materials filed with the FAA by appellants. (Jt. App. 4-208)

With the filing of the complaint appellants also filed a motion for preliminary injunction requesting the District Court on the basis of the emergency nature of the subject matter and the likelihood of ultimate success by appellants to issue a preliminary injunction to prevent the Administrator from refusing to ban smoking on airplanes. (Jt. App. 209)

The Appellees filed a response to this motion and cross motions for dismissal of the suit and for summary judgment. No answer has been filed to the complaint by appellees. Appellee Administrator sought dismissal on the ground that his refusal to ban smoking on airplanes was a matter committed to his unreviewable discretion. Appellee FAA sought dismissal on the ground that it was not a suable juristic entity. Summary judgment was sought on the basis that the Advance Notice of Proposed

Rule Making supplemented by an Affidavit by James F. Rudolph, Director of Flight Standards Service of the FAA were adequate justification for the Administrator's refusal to act. (Jt. App. 210-216)

On June 18, 1970 the District Court held a hearing on the motions submitted by both parties. On June 26, 1970 the Court entered an order denying appellees' motions to dismiss and finding that the action here in question was reviewable. The Court deferred decision on appellees' motion for summary judgment and appellants' motion for preliminary injunction until August 17, 1970 and ordered the Administrator to provide the Court within 30 days with a (Jt. App. 217):

full complete statement of the reasons both factual and legal, for his refusal to order an emergency ban on smoking on all passenger carrying civil aircraft (including rotor craft) and all materials considered by the Administrator in reaching his factual determination.

On August 7, 1970 after three requests for extensions of time and twelve days after the due date, the Administrator filed with the District Court a ten-page document which purported to be a response to the Court's order. The actual content of that document is discussed in detail in the argument, <u>infra</u>. Notable here is that no materials upon which the Administrator relied in reaching his factual conclusions were attached to the document. (Jt. App. 220-229)

The FAA Docket in this matter was by this time filled with over 2,000 comments, the vast majority of which (more than 75%) supported some control on smoking on airplanes. For the most part the comments received came either from medical and health associations or doctors endorsing controls on smoking and detailing the harmful effect on non-smokers,

or from individual airline pilots and others associated with airplanes indicating their concern about the safety of smoking on airplanes or from the general public describing personal experiences involving adverse health consequences suffered as a result of smoking on airplanes. A sample of all of these was submitted by appellants to the District Court prior to August 17, 1970 hearing. (Jt. App. 196-205, 231-288)

At the August 17, 1970 hearing the Court below granted appellee's motion for summary judgment and dismissed appellants' motion for preliminary injunction as moot. In its judgment, dated August 31, 1970, the District Court found that there was "a basis in fact" for the Administrator's refusal to act. (Jt. App. 291). The Court declined to accede to the request of government counsel to include within its judgment a finding that the basis for the Administrator's refusal to act was "rational". (Jt. App. 289-290)

On September 8, 1970, appellants filed their notice of appeal in this proceeding. In this appeal appellants seek a reversal of the summary judgment granted to appellee and judgment for appellants on their request for a permanent injunction to prevent the Administrator from continuing to refuse to ban smoking on all passenger carrying commercial aircraft (including rotor-craft).

In the alternative, if this Court should agree that the Administrator erred in applying incorrect legal standards in denying appellants
petition but that this Court will not at this time grant the permanent
injunction that appellants have requested, then this Court is requested
to remand this case to the Administrator for application of the proper
legal standards. However, in that event and in light of the fact that

each day more than half a million individuals fly in airplanes where smoking is permitted and that appellants' evidence of the serious danger to which these passengers are subjected as a result of smoking on airplanes has not been adequately refuted, then this Court is respectfully requested to order the District Court to grant appellants' motion for preliminary injunction. The preliminary injunction should remain in force until the Administrator has complied with this Court's order and has applied the proper legal standards to the appellants' petition and, assuming the petition is not granted, until such time as the Court below has had an opportunity to fully explore the Administrator's new response and appellants' reply thereto.

On September 11, 1970, in light of the serious emergency nature of the matters involved here, appellants filed a motion with this Court to advance on the docket and to expedite this proceeding. On September 30, 1970 Chief Judge Bazelon granted the appellants' motion.

STATUTES INVOLVED

49 U.S.C. Section 1303

In the exercise and performance of his powers and duties under this chapter the Administrator shall consider the following among other things as being in the public interest:

(a) the regulation of air commerce in such manner as to best promote its development and safety and fulfill the requirements of national defense;

* * * * *

49 U.S.C. Section 1421

(a) The Administrator is empowered and it shall be his duty to promote safety of flight of civil aircraft in air commerce by prescribing and revising from time to time:

* * * * * *

(6) Such reasonable rules and regulations or minimum standards, governing other practices, methods and procedure, as the Administration may find necessary to provide adequately for national security and safety in air commerce.

(b) In prescribing standards, rules and regulations, and in issuing certificates under this subchapter, the Administrator shall give full consideration to the duty resting upon air carriers to perform their services with the highest possible degree of safety in the public interest

* * * * * *

49 U.S.C. Section 1485(a)

Except as otherwise provided in this chapter, all orders, rules, and regulations of the Board or the Administrator shall take effect within such reasonable time as the Board or Administrator may prescribe, and shall continue in force until their further order, rule, or regulation, or for a specified period of time, as shall be prescribed in the order, rule, or regulation: Provided, That whenever the Administrator is of the opinion that an emergency requiring immediate action exists in respect of safety in air commerce, the Administrator is authorized, either upon complaint or his own iniative without complaint, at once, if he so orders, without answer or other form of pleading by the interested person or persons, and with or without notice, hearing, or the making or filing of a report, to make such just and reasonable orders, rules, or regulations, as may be essential in the interest of safety in air commerce to meet such emergency. Provided further, That the Administrator shall immediately initiate proceedings relating to the matters embraced in any such order, rule, or regulation, and shall, insofar as practicable, give preference to such proceedings over all others in this chapter.

ARGUMENT

Introduction and Summary

In its recent decision in Public Service Commission of New York v.
FPC U.S. App. D.C, F2d No. 23,446 June 29, 1970 this
Court reversed an order of the Federal Power Commission because the Com-
mission, while relying on its expertise, had failed to (id. at Slip Op. 6)
set forth convincing reasons for its determination in sufficient detail to allow the validity of those reasons to be critically examined by the parties adversely affected and to allow this Court to pass on the reasonableness of the Commission's conclusions.
Accord, Medical Committee for Human Rights v. SECU.S. App. D.C.
, F. 2d No. 23,105, July 8, 1970 (Slip Op p. 42);
Environmental Defense Fund v. Hardin, U.S. App. D.C,
F 2d, no. 23,813, May 28, 1970 (Slip Op. p. 11); Moss v. CAB, et al
U.S. App. D.C, F. 2d, No. 23,627, July 9, 1970
(Slip Op. p. 18).
In the instant case the Administrator of the Federal Aviation
Administration has submitted a ten-page document (Jt. App. 220-229)
as his purported compliance with the District Court's order of June 26,

1970 which required him to set forth a (Jt. App. 217):

full complete statement of the reasons, both factual and legal, for his refusal to order an emergency ban on smoking on all passenger carrying civil aircraft (including rotor craft) and all materials considered by [him] in reaching his factual conclusions.

In fact the document is replete with unexplained conclusions based upon unrevealed agency expertise. This document does not permit either appellants or this Court to critically examine the Administrator's refusl to act or to determine the reasonableness of his refusal.

On this appeal from the District Court's summary judgment in favor of the Administrator and its denial of appellants' motion for preliminary injunction, appellants seek, as did petitioners in Moss supra. and Public Service Commissioner of New York, supra., a reversal of the agency action because of the refusal and failure of the agency to give an adequate reason for its action.

The record before the Administrator and before this Court contains substantial evidence of the inherent safety hazard created by smoking on airplanes. In particular smoking on airplanes creates a grave risk of fire and fire induced smoke on the airplane, of impairment of mental and visual acuity of crew members and of adverse health consequences to non-smoking passengers particularly those with pre-existing illnesses. The Administrator's response is at most a denial that this evidence is sufficient to conclusively prove the safety hazard. Appellants concede that the subject requires further study but stress that this study should occur, as contemplated by 49 U.S.C. Section 1485(a), after the Administrator has taken emergency action to protect the safety of air travellers.

Appellants contend that the authority given the Administrator to impose emergency regulations must be exercised when, as here, prima facie evidence of a safety hazard is presented and the Administrator is neither able to totally rebut that evidence nor to demonstrate a paramount countervailing public interest which will be adversely affected if the emergency regulation is enacted.

The Administrator apparently believes his duty to best promote safety in air travel merely requires him to act as an arbiter between safety considerations and whatever are current operating procedures for

airlines. In this regard he has grossly distorted his statutory obligation to be an advocate for safety in air travel. This dereliction of duty is most apparent in this case where the Administrator has postponed and delayed taking action to ban smoking on airplanes even though he has failed to articulate a single public interest justification to continue this hazardous practice and even though he has conceded that much of the evidence presented by appellants raises sufficiently serious problems that further study is required.

Appellants' contention, simply stated, is that smoking should be banned on airplanes until the further study which the Administrator has ordered is completed. That is precisely what 49 U.S.C. Section 1485(a) intends. Appellants urge this Court to reverse the refusal of the Administrator to impose this temporary emergency ban on smoking on airplanes.

I.

THE ADMINISTRATOR OF THE FEDERAL AVIATION ADMINISTRATION ERRED AS A MATTER OF LAW IN CONCLUDING THAT ALTHOUGH HE IS OBLIGATED TO PROVIDE FOR THE HIGHEST POSSIBLE DEGREE OF SAFETY IN AIR TRAVEL AND ALTHOUGH THERE IS NO REASON CONSISTENT WITH THE PUBLIC INTEREST TO CONTINUE TO ALLOW SMOKING ON AIRPLANES, HE MAY REFUSE TO IMPOSE A TEMPORARY EMERGENCY BAN ON SMOKING ON AIRPLANES UNDER 49 U.S.C. SECTION 1485(a) UNTIL IT HAS BEEN CONCLUSIVELY PROVEN THAT SMOKING ON AIRPLANES CAN CAUSE FIRE OR FIRE INDUCED SMOKE, IMPAIRMENT OF MENTAL AND VISUAL ACUITY OF CREW MEMBERS, AND ADVERSE HEALTH CONSEQUENCES FOR NON-SMOKING PASSENGERS, PARTICULARLY THOSE WITH PRE-EXISTING ILLNESSES

Whether appellees were arbitrary and capricious in their refusal to impose a temporary emergency ban on smoking on airplanes, requires an examination of the reasons given for that refusal and the underlying data which allegedly supports those reasons. Ultimately this will require a weighing of the facts and appellants will prevail if on these facts the Court concludes that there was no "rational basis" for the appellees' refusal. Eastern Central Motor Carriers Association v. U.S. 239F. Supp. 591, 594-595 (D.C., 1965); Dell Publishing Co. v. Summerfield 198FS843 (D.C., 1961) affirmed 113 U.S. App. D.C. 1, 303F 2d766; East Texas Motor Freight Lines v. U.S. 96F Supp. 424, 427-428 (N.D. Tex., 1951).

Before reaching the ultimate issue of the arbitrariness and capriciousness of appellees' refusal, it is necessary to determine what standards the appellees were required to follow in deciding whether to issue a temporary emergency order. The authority to issue such an order is found in 49 U.S.C. Section 1485(a) which provides:

(a) Except as otherwise provided in this chapter, all orders, rules, and regulations of the Board or the Administrator shall take effect within such reasonable time as the Board or Administrator may prescribe, and shall continue in force until their further order, rule, or regulation, or for a specified period of time, as shall be prescribed in the order, rule, or regulation: Provided, That whenever the Administrator is of the opinion that an emergency requiring immediate action exists in respect of safety in air commerce, the Administrator is authorized, either upon complaint or his own initiative without complaint, at once, if he so orders, without answer or other form of pleading by the interested person or persons, and with or without notice, hearing, or the making or filing of a report, to make such just and reasonable orders, rules, or regulations, as may be essential in the interest of safety in air commerce to meet such emergency. Provided further, That the Administrator shall immediately initiate proceedings relating to the matters embraced in any such order, rule, or regulation, and shall, insofar as practicable, give preference to such proceedings over all others under this chapter. (Emphasis added)

The critical part of the section is the phrase "in respect of safety in air commerce". Only where safety is involved is the administrator authorized to invoke emergency procedures.

This authority is consistent with the high responsibility which the administrator possesses with respect to safety in air commerce and which is set forth in 49U.S.C. Sections 1303(a), 1421(a) and 1421(b):

Section 1303

In the exercise and performance of his powers and duties under this chapter the Administrator shall consider the following among other things as being in the public interest:

(a) the regulation of air commerce in such manner as to best promote its development and safety and fulfill the requirements of national defense:

* * * * *

Section 1421

(a) The Administrator is empowered and it shall be his duty to promote safety of flight of civil aircraft in air commerce by prescribing and revising from time to time:

* * * * *

- (6) Such reasonable rules and regulations or minimum standards, governing other practices, methods and procedure, as the Administration may find necessary to provide adequately for national security and safety in air commerce.
- (b) In prescribing standards, rules and regulations, and in issuing certificates under this subchapter, the Administrator shall give full consideration to the duty resting upon air carriers to perform their services with the highest possible degree of safety in the public interest . . .

[Emphasis added]

The legislative history of the Federal Aviation Act of 1958 demonstrates that the question of safety was foremost in the mind of Congress. The Act was passed (House Report No. 2360 2 U.S. Code, Congressional and Administrative News 3741 1958):

To provide for the regulation and promotion of civil aviation in such manner as to best foster its development and safety.

In fulfilling his duty the Congress intended for the Administrator to anticipate safety requirements and be ever vigilant (House Report No. 2360, supra, p. 3747):

The most carefully thought out and designed equipment alone cannot make for safety in air traffic operations. Something more than communications and intricate guidance devices must be provided. There must be a well planned system, operated by qualified technicians working within the framework of rules devised to provide safety features necessary for modern day air operations. The most careful consideration must be given in the drafting of these regulations.

Once promulgated, the regulations must be applied and enforced, and, if need be, modified or repealed to meet changing conditions. Rulemaking processes should not lag far behind advances in equipment and techniques. (Emphasis added)

The Courts have also recognized that the Administrator has an affirmative duty to act to provide for the <u>highest possible degree</u> of safety in air travel. In <u>Rosenhan v. United States</u>, 131 F. 2d 932 (C.A. 10th, 1942) cert. denied. 318 U.S. 799, a pilot was fined for flying an airplane without a certificate of airworthiness and thus violating a safety regulation. The pilot argued that in fact the plane did not create a safety hazard given the place and manner of its operation. The Court in rejecting this argument concluded (131 F. 2d at p. 935):

Congress does not see fit to limit the question of safety in these circumstances to a manifestation of actual danger, rather it has sought to eliminate all potential elements of danger.

This duty to eliminate all <u>potential</u> safety hazards has been the basis for Court decisions that the United States is liable where an

airplane accident occurs as a result of a danger which the Administrator foresaw or should have foreseen and which by rule or regulation he could have eliminated. Rapp v. Eastern Airlines, Inc. 264 F. Supp. 673, 676, 680 (E.D. Pa., 1967) affd. 399 F.2d 14 (C.A. 3rd) cert. denied 393 U.S. 979 (FAA negligent for not prescribing regulations to prevent the engines of the Boeing Electra from ingesting birds and causing power loss); Lightenburger v. United States, 298 F.Supp. 813 (C.D. Calif., 1969) (FAA negligent for not providing air controllers with information that regarding the fact/the duration of time that wing tip vortices remain on the runways as hazards to smaller aircraft increases two to three minutes in the case of larger aircraft); Neff v. United States, 282 F.Supp. 910, 920 (D.C., 1968) (government has the duty to provide airplane with all significant weather information regardless of whether regulations require that specific data involved be transmitted or not).

Thus the Administrator has the duty to resolve all doubts in favor of safety in air travel. It is insufficient to merely find that a particular practice is more likely than not to be safe or to find that it cannot be conclusively determined whether the particular practice is or is not safe. It is in this context that the Administrator's refusal to exercise emergency authority under 49U.S.C. Section 1485(a) must be examined.

It is clear from an examination of the Administrator's basis for refusing to impose the temporary emergency ban on smoking on airplanes, that he has failed to apply the proper standard (Jt. App. 220-229). The entire tone of the document suggests that the Administrator believes he has a duty to preserve smoking on airplanes and that any attack on that procedure must establish conclusively that smoking on airplanes

has already caused an airplane accident or otherwise created a safety hazard.

The errors in this position are threefold. First, as noted earlier the duty to provide for the "highest possible degree of safety" in air travel requires that doubts be resolved in favor of safety, that the Administrator has the burden of proving that continuation of a practice, against which a prima facie case has been presented, is nonetheless safe. This Court in Environmental Defense Fund v. Health, Education and Welfare (no. 23, 812 decided May 28, 1970) took a similar view with respect to the Secretary's duty to set pesticide tolerances on raw agricultural products. See Slip Op. P. 16, footnote 27. There as here the government agency had a duty to provide for safety and that duty created a burden of proof on the government where the petitioner presented a prima facie case with respect to a safety hazard.

Second, the use of the phrase "highest possible" in the statute (49U.S.C. Section 1421(b)) and the reference in 49U.S.C. Section 1485(a) to "just and reasonable orders" express the Congressional intent that the Administrator weigh the possibility of a safety hazard against the impact on the public interest of the emergency action which would have to be taken. Where the possibility of a hazard is slight but the action needed to eliminate it would require a major disruption in air travel, the Administrator would be justified in refusing to act. Obviously if there is little or no public interest served by continuing a practice it would require a very slight showing of a possible safety hazard to warrant action.

In the present case the Administrator does not even assert much less prove, as he cannot, that there is any public interest in continuing to allow smoking on airplanes. Quite to the contrary, Federal agencies

and Congress have formulated the basic United States policy against smoking. The Federal Communications Commission now requires that antismoking commercials be given equal time with pro-smoking commercials. Congress enacted last year a statute strengthening the warnings required on cigarettes by requiring that the following language appear in a conspicuous place on every cigarette pack:

Warning: The Surgeon General has Determined that Cigarette Smoking is Dangerous to Your Health and has banned all cigarette advertising on any medium of electronic communication after January 1, 1971. (P.L. 91-222, 91st Cong., 1st Sess. amending 15 U.S.C. 1331-1339). By these actions the federal government has made clear in no uncertain terms that the public interest is best served by a reduction in smoking and certainly that there is no public interest in encouraging smoking.

This is not to say that the government seeks, nor does this litigation seek, a prohibition on all smoking. What is clear is that as a privilege, smoking can and should be curtailed when its adverse effects extend beyond the user regardless of the extent of those adverse effects on the non-user. Thus the United States Supreme Court, many other federal courts (including this Court), many state and local courts, the United States House of Representatives and United States Senate, federal museums such as the National Gallery and Smithsonian Institute, libraries, such as the Library of Congress, and hundreds of other governmental institutions and officials have banned smoking in all or part of their official premises.

Furthermore implementation of a ban on smoking would require no more than an order that the no smoking light remain on throughout the

flight. Thus, there are no technical difficulties which might warrant a delay in action.

Thus because there is no public interest to be protected by continuing to allow smoking on airplanes and because there are no technical barriers in instituting a ban on smoking on airplanes, the highest possible degree of safety in air travel will not be achieved if there is any unrefuted possibility that smoking on airplanes creates a safety hazard.

Third, the Administrator has erred in exercising his emergency authority under the statute by requiring that the evidence of a safety hazard conclusively prove the hazard before action is taken. The scheme of 49U.S.C. Section 1485(a) clearly intends that emergency action by the Administrator be taken before all the facts have been gathered. The Administrator is required, after issuing an emergency order, to "immediately initiate proceedings relating to the matters embraced in any such order". This, of course, presupposes that his action has been taken without the necessary investigation which a proceeding would require.

In the instant case the Administrator has consistently taken the view that he must fully investigate all aspects of the problem before he acts. For instance, with respect to the danger created by members of the crew smoking and thus inhaling massive concentrations of carbon monoxide which impair visual and mental acuity, the Administrator has said (Jt. App. 228):

The matter whether any possible safety hazard is created by smoking by crew members of the flight crew, is presently under FAA study to determine whether any rule making is required in that regard.

This procrastination occurred even though the Administrator had conceded that (Jt. App. 220):

...there is some evidence that pilots who smoke cigarettes with deep inhalation may experience some decrease in night vision sensitivity [rod vision] as a result of the lowering of the oxygen content of their blood...

Thus the Administrator's failure to apply the proper standard for invoking the emergency safety authority is at the root of his refusal to act. This application of an erroneous standard was upheld by the Court below for, although the Court did not write an opinion, it clearly accepted the Administrator's limited interpretation of his responsibilities under the statute.

II.

IT WAS ARBITRARY AND CAPRICIOUS FOR THE ADMINISTRATOR OF THE FEDERAL AVIATION ADMINISTRATION TO REFUSE TO IMPOSE A TEMPORARY EMERGENCY BAN ON SMOKING ON AIRPLANES

Even if the Administrator's justification for his actions is assumed to be based upon a proper interpretation of the statute the basis for his decision was not rational and his action was arbitrary and capricious. The weakness of the Administrator's justification for his refusal to act is apparent from the fact that the Court below expressly refused to find that the Administrator had a rational basis in fact for his refusal. Although counsel for the government submitted a proposed judgment to the Court for signature which alleged that a "rational" basis existed for the Administrator's refusal (Jt. App. 289-290), the judgment signed by the Court significantly did not include this qualifying word. (Jt. App. 291-92). While we share the District Court's conclusion that there was no rational basis for the Administrator's refusal to act we do not agree that the Administrator is not arbitrary and capricious where there is only a basis for his refusal to act and that basis is not rational.

See Eastern Central Motor Carriers Ass'n. v. U.S., supra; Dell Publishing

Co. v. Summerfield, supra; East Tex. Motor Freight Lines v. U.S., supra.

In this regard alone the Court below was in error and the decision should be reversed.

An examination of the facts before the Administrator demonstrate that he had no basis for his refusal to temporarily ban smoking on airplanes. Evidence was presented which established that smoking on airplanes creates a risk of fire or fire induced smoke on the airplane, creates a risk of impairment of mental and visual acuity of crew members and creates a risk of adverse health consequences to healthy non-smokers and aggravation of the pre-existing illnesses of other non-smokers.

A. Fire and Fire Induced Smoke

Appellants base their contention that smoking on airplanes creates a risk of fire or fire induced smoke upon the fact that the fire present at the end of a lit cigar, cigarette or pipe and the fire created in lighting these items is inherently dangerous in the close confines of an airplane in flight, particularly when the interior materials of airplanes are tested for fire resistance at a temperature below the temperature of burning tobacco. Burning tobacco has a temperature range of 1400° to 1890° Fahrenheit (Jt. App. 224) and interior cabin materials will not even be tested at temperatures as high as 1550° Fahrenheit until a pending rule by the FAA is adopted. 34 Federal Register 13036, 13037 (August 12, 1969). In addition appellants provided evidence of three airplane accidents which demonstrated how smoking on airplanes could cause fire or fire induced smoke which would endanger the safety of the airplane passenger.

Under 14 CFR 25.853(a) and (b) and 14 CFR 1.1, the flame-resistant standards do not mean that the interior cabin materials are incapable of burning but only that the flame will self-extinguish (but not the smoke) when the fire source is removed.

In the airplane accident involving a United Airlines Viscount (Jt. App. 102-111) the accident was caused by an inflight fire in the passenger compartment. The CAB found (Jt. App. 109):

Burns on the free-fall victim and fire-damaged passenger cabin material found remotely from the primary impact and ground fire area established conclusively that there was an inflight fire in the passenger cabin. Evidence of use of the portable cabin CO₂ extinguisher and the attempt to use the portable water extinguisher, together with the open valve of a flight crew walk-around oxygen bottle are suggestive of the first officer having gone back to the cabin to fight the fire a few minutes before the crash. Opening the outflow valves, the left side cockpit window, and emergency exits was probably done in connection with smoke evacuation efforts. [One possible explanation for loss of control of the aircraft was incapacitation of the pilot by smoke.] (Brackets added)

On board fire extinguishers were used and did not extinguish the fire.

Normal ventilation did not clear the smoke and apparently it was never expected that it could because opening doors and windows was considered a standard procedure for eliminating smoke.

With regard to the inflight fire on board a Boeing 707 (Jt. App. 28-29) evidence that a cigarette caused the fire comes first from the April 21, 1965 Report of the CAB Bureau of Safety which found that (p. 3) "fire was originally attributed to a smoldering cigarette" and second from a paper presented by four members of the Office of Aviation Medicine of the Federal Aviation Agency which, in discussing the incident, concluded that "Apparently a lighted cigarette butt started the cabin fire" (Jt. App. 29). Although the incident occurred while the plane was on the ground, the ventilation system was unable to clear the air and the plane had to be evacuated. The smoke problem was compounded by the use of a fire extinguisher as the FAA medical officers stated (Jt. App. 29):

One member used a water fire extinguisher which put out the flames but a dense black smoke continued to billow forth.

In the crash involving a Piedmont flight and a private plane on July 19, 1967 in which 82 people were killed (Jt. App. 115-121), while the accident report found that there was no evidence of an inflight fire before the accident (Jt. App. 116) the flight recorder clearly reveals that a cigarette fire in an ashtray in the cockpit did occur within a minute of the collision (Jt. App. 120-121). The accident report makes no mention of this but does dwell at great length on the visibility from the Piedmont plane and the possibility that it could have taken evasive action if the private plane had been sighted (Jt. App. 116-119). These studies indicate that if the crew looked directly at the private plane they could have seen it 35 seconds before the collision (assuming no clouds) and if they were looking straight ahead and their vision was unobstructed by clouds they would have seen the private plane 10.1 to 12 seconds before impact (Jt. App. 118-119). Most significantly the report observes that if the crew shifted its eye position - for instance, to determine the source and cause of the ashtray fire in the cockpit they would not have had as much, if any, visibility. The danger signals are quite clear. The presence of smoking in the cockpit represents a possible distraction as the result of an ashtray fire, a wayward ash, smoke itself or innumerable other smoking related possibilities.

Finally, appellants reminded the Administrator that a pending rule making (FAA Docket No. 9611-34 Federal Register 12450-12452 (July 30, 1969)) was based upon the fact that there were no present standards controlling smoke

emission from interior cabin materials. John H. Reed, Chairman of the National Transportation Safety Board wrote to the FAA on October 6, 1969 with respect to the proposed rule making and said (FAA Docket No. 9611):

Asphyxiation from such smoke [caused by burning of interior cabin materials] has been a leading cause, sometimes the sole cause of fatalities in a number of aircraft accidents. (Brackets added)

What these and other facts presented by appellants represent, at the very least, is compelling evidence of the possible way in which burning tobacco could cause a fire or fire induced smoke on an airplane and the disastrous consequences of such an occurrence.

The Administrator never introduced any evidence to refute these facts but, hiding behind the skirts of agency expertise, filed a statement in which he dismissed the evidence as inconclusive (Jt. App. 220-229).

Not only did this response not represent adequate reply to appellants' evidence, but it was not a clear presentation of the basis for the Administrator's decision "in sufficient detail to permit prompt and effective review" (Environmental Defense Fund et. al. v. Hardin et. al. (C.A. D.C. No. 23, 813) decided May 28, 1970 (slip op. at 11)) nor was it a "full and complete statement of the reasons, both factual and legal for his refusal" to act (Order of June 26, 1970 by Judge Waddy, Jt. App. 217) nor did it include "all materials considered by the Administrator in reaching his factual conclusions" (Order of June 26, 1970 by Judge Waddy, Jt. App. 217).

The Administrator's stated reasons for his refusal to temporarily ban smoking on airplanes conclusively establish that his refusal to act was both arbitrary and capricious. He claims that the safety hazard which

warrants banning smoking during fueling, takeoff and landing does not warrant a ban at other times because when turbulence or a mid-air collision occur sufficient to damage fuel lines, the pilot will light the no smoking sign. The same impact which caused the fuel leak could easily knock the smoldering ash to the floor, could incapacitate the smoker and would certainly create conditions in which totally extinguishing the smoldering tobacco would be very difficult. Defendants' admission that fuel can leak into the passenger compartment as a result of a mid-air collision or heavy turbulence and his admission that smoking under such circumstances is dangerous is in and of itself sufficient reason to totally ban smoking on airplanes rather than relying upon the indpendent action of 100-200 passengers, in what is already an emergency situation, to extinguish their cigarettes, pipes and cigars.

As indicated earlier, and proven by appellants' own statistics (Jt. App. 224) tobacco normally burns, when not being puffed, at a temperature in excess of the temperature at which interior cabin materials are tested. It is ludicrous that the Administrator, fully aware of this fact, should argue that because interior cabin materials have some flame resistance at one temperature there is no danger of fire occurring when the materials come in contact with a fire source of a higher temperature.

With respect to the three airplane accidents, the Administrator
fails to refute the fact that each accident is at least evidence of how
fire and fire induced smoke can be caused by smoking on airplanes. Thus
in discussing the United Airlines Viscount accident (Jt. App. 223) the
Administrator does not deny that lighter fluid from a passenger's cigarette
lighter could have caused the fire. In discussing the TWA Boeing 707 fire

(Jt. App. 223) he does not deny that a cigarette could have caused the fire. In discussing the mid-air collision involving a Piedmont Boeing 727 (Jt. App. 228) the Administrator merely asserts that the possibility of ashtray fires in crew compartments does not create a significant safety hazard without denying that in fact such a fire did occur on a flight where one possible contributing factor in the tragedy may have been distraction of the crew and where the last minute of life of the crew before the collision indicates that the ashtray fire totally monopolized their conversation. (Jt. App. 120-121).

The Administrator alleges that fire extinguishers can prevent all fire dangers but does not discuss the fact that on one flight (the Boeing 707 (Jt. App. 28-29)) the fire extinguisher was used and the smoke thereby created forced the passengers to evacuate the plane and on another (the United Airlines Viscount) the inflight fire could not be extinguished and the smoke was so heavy that doors and windows were opened to aid, unsuccessfully, smoke clearance. Perhaps the best example of the arbitrariness of the Administrator's reply is his unsupported assertion that once a "fire is extinguished smoke would no longer be emitted" (Jt. App. 223) in the face of direct evidence in at least one airplane accident of intense smoke created after the fire was extinguished. (Jt. App. 29)

B. Impairment of Visual and Mental Acuity of Crew Members

Appellants' evidence includes numerous scientific articles (Jt. App. 125-130, 133-191, 194-195) and first hand reports of aircraft personnel (Jt. App. 192-193, 278-288) which detail the adverse consequences of tobacco smoke on visual and mental acuity. The Administrator concedes that as a result of carbon monoxide in tobacco smoke, crew members who

smoke and inhale deeply suffer some reduction in their night vision (Jt. App. 228). The Administrator does not deny that even the non-smoking crew member suffers from smoking of others and must endure headaches, tearing, coughing and other semi-debilitating effects (see Jt. App. 278-288), nor that carbon monoxide at any level is regarded as unsafe even when inhaled as part of someone else's tobacco smoke (see Jt. App. 125-130).

What is astounding is that while admitting that there is a reduction in night vision of smoking crew members the Administrator concludes that highly sensitive night vision is unimportant to airplane pilots because (Jt. App. 228):

1) What they are to see at night is supposed to be well lit; and

2) The brightly lit instrument panel already reduces their night vision.

Of course if the object which should be seen, such as a small private plane, is not brightly lit the pilot will have less chance of seeing it if he is smoking or there is tobacco smoke in the cockpit than the non-smoking pilot in a "clean air" cockpit. It is unbelievable that airplane passengers should be subjected to this risk for even one day longer because the Administrator wants more time to explore the extent of the problem (Jt. App. 228).

C. Health Hazards to Non-Smokers

Appellants have carefully documented the adverse health consequences of tobacco smoke. (Jt. App. 18-25, 34-52, 122-130). It is the smoke and not smoking itself which causes cancer, emphysema, heart disease, bronchitis as well as shortness of breath, headaches, nausea, eye tearing, coughing and which aggravates pre-existing illnesses such as asthma, allergy, colds, coughs and nose, throat and lung ailments

generally. The Administrator was not only presented with scientific data but with the testimony of thousands of air travellers detailing the adverse health consequences which they suffer from tobacco smoke on airplanes, samples of which comments are included in the record before the Court (Jt. App. 47-52, 59-62, 68-99, 197-205, 232-247). Comments were also received by the Administrator from scores of medical societies and health associations confirming the adverse health consequences suffered by non-smokers on airplanes as a result of smoking and a sample of these comments is included in the record before the Court. (Jt. App. 249-276).

In rejecting all of this data the Administrator claims that no emergency exists because none of the data establishes that tobacco smoke will cause death or permanent health damage to non-smoking passengers. However there is no basis for the Administrator to apply such a narrow construction to the term "emergency". Appellants Newbill, Limoncelli, Walker and Ingram in their unchallenged affidavits submitted to the Administrator (Jt. App. 59-62) describe the effect which tobacco smoke has on them and how it reduces the number of flights they can take, causes them acute discomfort during the flight and disables them for up to a week after the flight. Dr. Zussman in discussing his article Atopic Symptoms Caused by Tobacco Hypersensitivity (Jt. App. 122) estimates that as many as eight million allergic Americans such as Appellants Limoncelli, Walker, Newbill and Ingram, suffer adverse health consequences from tobacco smoke (Jt. App. 97). Some of these eight million sufferers have detailed the consequences they suffered as a result of smoking on airplanes. (Jt. App. 232-247).

The Administrator further alleges that there is a complete exchange of air in any airplane every 3 minutes and therefore concludes that there cannot be smoke concentrations. (Jt. App. 225) But he does not explain how much of the exchanged air has been recirculated without filtering out the tobacco smoke. Without a 100% flow of fresh air into the plane an air exchange every 3 minutes really represents nothing more than an exchange of stale smoke for fresh smoke. He fails to account for the fact that on an airplane the smoking is steady and at any given moment smoke represents a significant portion of the cabin air. The abstract discussion (Jt. App. 225-226) of how air circulates within the plane does not refute the empirical evidence of thousands of air travellers who despite these circulation patterns have been subjected to tobacco smoke which has adversely affected their health (Jt. App. 232-247). Obviously the ventilation system, either as a result of airflow, recirculation or the quantity of smoke produced, is not sufficient to prevent harmful concentrations of tobacco smoke.

The Administrator refers to the existence of a preliminary study which he claims found carbon monoxide concentrations on two aircraft to be only 5 parts per million. The study is not included in the record before the Court nor in FAA Docket. There is no indication of how many passengers smoked, how long the smoking lasted, how many cigarettes were smoked, whether the planes were selected at random or were specially selected for the test, what methods were used to test carbon monoxide concentrations, in what part of the plane the tests were conducted, etc. There is no way to assess the quality of this data. It cannot support the Administrator's inaction.

Appellee claims (Jt. App. 227) that the medical data submitted by appellants is not adequate because tests were not conducted in surroundings as well ventilated as an airplane. As previously indicated the evidence in the docket establishes that airplanes are frequently filled with smoke concentrations. (Jt. App. 232-247). The concentration of people on a fully occupied airplane is considerably higher than in a house, office or restaurant. Furthermore airplane ceilings are lower and there is more space occupied in an airplane by baggage racks and chairs than in an average room. Thus the airplane environment is considerably more cramped and more susceptible to smoke concentration than the environments in which the tests were made.

The most persuasive evidence of the Administrator's arbitrariness is his frank admission that the problem of adverse health consequences is sufficiently serious to warrant an in-depth exploration (Jt. App. 227). Appellants argue that the present data on adverse health consequences is not conclusive but surely, as the Administrator concedes, it is probative. If there were even one articulated rational reason for continuing to allow smoking on airplanes, perhaps the Administrator's inaction would not appear to be nearly so arbitrary. But no such rational reason has been presented. Surely the health of the more than 2,000 passengers who wrote to the FAA asking for immediate relief not to mention millions of others is justification enough to give them the benefit of every doubt and to free them from the smoke-filled airplane cabin at least until studies are completed which conclusively prove the case one way or the other.

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According to a letter from Boeing Aircraft Corporation contained in the FAA Docket, there is 8835 cubic feet of space in a fully furnished Boeing 707. With 165 passengers on board (Jt. App. 226) there is 54 cubic feet for each passenger or a space 6 feet x 3 feet x 3 feet. Even the notorious Washington cocktail party or smoke filled room gives each person more space. The 54 cubic feet is about the size of a coffin.

CONCLUSION

For the reasons stated above this Court should overrule the District Court's judgment for the Administrator and should reverse the Administrator's refusal to impose a temporary emergency ban on smoking on airplanes or in the alternative should remand this case to the Administrator for further proceedings and should grant appellants motion for preliminary injunction pending the District Court's review of the Administrator's further explanation of his refusal to act.

Respectfully submitted,

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October , 1970



IN THE UNITED STATES COURT OF APPEALS FOR THE DISTRICT OF COLUMBIA CIRCUIT

United States Court of Appeals for the District of Countries Ground

RALPH NADER, IRIS CLARK INGRAM, NEW 1 2 1970

DORIS LIMONCELLI, MRS. HIRAM E.

NEWBILL AND HENRIETTA R. WALKER, Mathan & Can

Appellants, CLERK

FEDERAL AVIATION ADMINISTRATION AND HONORABLE JOHN H. SHAFFER, ADMINISTRATION, FEDERAL AVIATION ADMINISTRATION,

Appellees.

ON APPEAL FROM THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF COLUMBIA

BRIEF FOR THE APPELLEES

United States Court of Appeals of the Bismet of Columbia Croult

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IN THE UNITED STATES COURT OF APPEALS FOR THE DISTRICT OF COLUMBIA CIRCUIT

No. 24,616

RALPH NADER, IRIS CLARK INGRAM, DORIS LIMONCELLI, MRS. HIRAM E. NEWBILL AND HENRIETTA R. WALKER,

Appellants,

v.

FEDERAL AVIATION ADMINISTRATION AND HONORABLE JOHN H. SHAFFER, ADMINISTRATOR, FEDERAL AVIATION ADMINISTRATION,

Appellees.

ON APPEAL FROM THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF COLUMBIA

BRIEF FOR THE APPELLEES

ISSUES PRESENTED*

1. Whether the matter of what constitutes an "emergency" requiring the invocation of the Federal Aviation Administrator's summary power under 49 U.S.C. 1485(a) to enact emergency rules without notice or hearing rests within the discretion of the Administrator.

^{*/} This case has not previously been before this Court except on plaintiffs' motion to expedite the proceedings.

2. Whether the Administrator abused his discretion by determining that smoking on airplanes does not present such an emergency.

STATEMENT OF THE CASE

This action arises from petitions brought by plaintiffs before the Federal Aviation Administration seeking to impose an immediate emergency ban on smoking on all commercial aircraft, without the notice or hearing which normally attends rule-making proceedings (J.A. 15, 54). The basis of the petitions was that the practice of smoking on airplanes constituted an "emergency requiring immediate action" such as to require the Administrator to exercise his summary emergency powers under 49 U.S.C. 1485(a) to issue an immediate rule banning smoking. The Administrator determined that much of the matter presented by plaintiffs was worthy of study and possibly justified the existence of some rule with respect to smoking on aircraft; however, finding that smoking did not present an "emergency", the Administrator refused to proceed by emergency rule-making under 49 U.S.C. 1485(a),

1/ 42 U.S.C. 1485(a) provides:

^{* * *} That whenever the Administrator is of
the opinion that an emergency requiring immediate
action exists in respect of safety in air commerce,
the Administrator is authorized, either upon complaint or his own initiative without complaint,
at once, if he so orders, without answer or other
form of pleading by the interested person or persons, and with or without notice, hearing, or the
making or filing of a report, to make such just
and reasonable orders, rules, or regulations, as
may be essential in the interest of safety in
air commerce to meet such emergency: Provided
further, That the Administrator shall immediately

(Footnote cont'd on p. 3)

and instead determined to proceed in accordance with the agency's normal rule-making procedures (J.A. 207, 214, 220). Plaintiffs then brought this action in the district court, challenging the Administrator's decision to proceed by normal rule-making procedures (J.A. 5). The district court (Waddy, J.), finding that the Administrator's decision had a basis in fact and was not arbitrary and capricious, upheld the administrative determination (J.A. 291), and plaintiffs have filed this appeal.

On December 8, 1969, plaintiff Nader, subsequently joined by the other plaintiffs, filed a petition with the Administrator requesting him to exercise his summary power under 49 U.S.C. 1485(a) to impose an immediate emergency ban on smoking in all passenger carrying aircraft (J.A. 15, 54). The petition alleged that smoking on aircraft created an imminent and serious danger to the safety of the aircraft such as to require the Administrator to invoke his emergency rule-making procedures. Specifically, the petition and a supplementary letter from counsel (J.A. 64) alleged that emergency rule-making was required because:

- (1) Lighted cigarettes, cigars, and pipes create an imminent and serious threat of fire or fire-induced smoke in the aircraft;
- (2) Tobacco smoke is deleterious to the health of nonsmoking passengers;
- (3) Smoking is an annoyance and discomfort to, and discrimination against, the nonsmoking passengers;

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^{!/ (}Cont'd) initiate proceedings relating to the matters embraced in any such order, rule, or regulation, and shall, insofar as practicable, give preference to such proceedings over all others under this chapter.

(4) Smoking by flight crew members during operations presents a possible distraction and reduces the crew's mental and visual alertness.

Attached to the petition were various scientific material, accident reports, and letters which, plaintiffs contended, supported their request for an emergency rule.

Upon consideration of the petition and supporting material, the agency determined that matters worthy of further consideration were presented by the petition. However, the agency rejected the claim that an "emergency" was presented requiring the invocation of the Administrator's summary power under 49 U.S.C. 1485(a) to issue an immediate rule without notice or hearing (J.A. 214, 220). Instead, the agency determined to follow its normal rule-making procedures pursuant to 49 U.S.C. 1421, and issued in the Federal Register an Advance Notice of Proposed Rule Making (J.A. 207; 35 F.R. 5045).

This Advance Notice set forth that the agency "is considering the need to further regulate the smoking of cigarettes, cigars, and pipes" by persons in the passenger compartment of aircraft, and invited comments by interested parties. The notice specified that such an "advance" notice is issued "when it is found that the resources of the FAA and reasonable inquiry outside of the FAA do not yield a sufficient basis to identify and select a tentative course of action or alternate courses of action, or where it would be helpful to invite public participation in the identification and selection of a course or alternative courses of action with respect to a particular rule-making problem" (J.A. 207).

The agency in the Advance Notice stated that the contention that tobacco smoke presented a health hazard to passengers warranted "an indepth exploration" and, indeed, a study on that subject was already being conducted by the agency. The agency solicited comment concerning the seriousness of this danger and the alternative avenues of remedy. The agency pointed out that the inquiry would be limited to considerations of safety, and the agency's statutory authority did not extend to making rules on the grounds of annoyance and discomfort to, and discrimination against, nonsmoking passengers. The Advance Notice also stated that the agency, after considering the matter submitted in the petition, had concluded that no significant hazard of fire in an aircraft was associated with smoking. (The Advance Notice did not examine the matter of whether smoking by the aircraft's crew created a safety hazard; this matter, however, was under study by the FAA to determine whether any rule-making action was necessary (J.A. 216).)

Following issuance of this Advance Notice of Proposed Rule Making, plaintiffs filed the instant action in the district court, asserting that the Administrator had acted arbitrarily and capriciously and had abused his discretion in failing to issue an emergency rule immediately banning smoking on aircraft (J.A. 5). The complaint sought for the court to order the FAA to issue at once a rule banning smoking in commercial aircraft.

In response, the Government moved for dismissal of the suit and summary judgment. In support of this motion the Government submitted an affidavit of James F. Rudolph, Director of

Flight Standards Service of the FAA, explaining why the Administrator had determined that no emergency existed (J.A. 214), and that the agency would proceed to examine the problem of smoking in aircraft in accordance with its normal procedures. Mr. Rudolph observed that "[m]illions of miles have been flown over many years without passenger smoking creating a safety problem"; that "[m]eaningful assessment of the magnitude of the possible safety hazard created by passenger smoking must await completion of more extensive scientific inquiry into this problem, specifically considering the environment within a passengercarrying airplane"; and that although the FAA was conducting a study in the matter of whether any safety hazard is created by smoking by flight crew members, no substantial evidence had yet been obtained by the FAA that smoking would cause a decrease in mental and visual acuity "to a degree that the high level of safety required in the public interest for passenger-carrying aircraft would be so reduced as to constitute a hazard to air safety" (J.A. 215-216).

On June 26, 1970, the district court, denying the motion to dismiss, decided to remand the case to the agency with directions that the Administrator file with the Court "a full complete statement of the reasons, both factual and legal, for his refusal to order an emergency ban on smoking on all passenger carrying civil aircraft (including rotorcraft) and all materials considered by the Administrator in reaching his factual determinations" (J.A. 217). In compliance with this order the agency submitted an extensive "Statement of Reasons for Determination of No

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Emergency," elaborating on the reasons for the Administrator's determination that no emergency was presented and stating the materials considered by the Administrator in making his determination (J.A. 220).

The Administrator's Statement of Reasons discussed and rejected each of the various points raised by the petition as to the need for an emergency rule banning smoking:

a. The Administrator first determined that lighted cigarettes, cigars or pipes do not create a serious or imminent threat of fire or fire-induced smoke aboard passenger-carrying commercial aircraft. The Administrator emphasized (J.A. 222):

[E]xamination by FAA experts of the service record of passenger-carrying commercial aircraft, including the record cited in the present petition, revealed no evidence of a hazard of this nature associated with smoking on these aircraft, as presently regulated. Millions of miles have been flown over many years without passenger smoking creating a safety problem. There has never been an accident attributable to smoking by passengers. No incident reports on record indicated that the fires that did occur in flight were caused by passenger smoking.

The Administrator also pointed out that smoking is not permitted during fueling at the ramp, on take-off, and on landing. "There is no need for such precautions during enroute flight, since there is enough time available, should a crash landing become necessary, to extinguish the cigarettes, cigars, or pipes. En route there is no danger of a cigarette igniting fuel or fuel fumes during the flight since the fuel lines in the aircraft are well isolated from the passenger compartment." (J.A. id.)

Likewise, there was no "realistic possibility of an in-flight fire due to a passenger's or crew member's cigarette igniting

fuel from fuel lines or tanks ruptured by violent turbulence"

(Id.). Before severe turbulence would cause fuel to escape into the crew or passenger compartment, damage of such a degree would already have resulted to an aircraft as to cause the crew to declare an emergency and light the no smoking sign (Id.).

The Administrator also observed that current fire-resistance standards for interior cabin materials "ensure that they are not easily ignited by smokers and that, if ignited, they are slow-burning and self-extinguishing. In any event, if a fire should occur from smoking, it would be small, easily detected, and readily extinguished by the crew using the hand fire extinguishers prescribed by the current regulations" (J.A. 223). The agency has a continual program of upgrading the fire-resistance standards for cabin materials, and is in the process of promulgating even higher standards in this regard (J.A. 224).

The Administrator noted that the presence of oxygen dispensing equipment on aircraft did not constitute a hazard, since, when oxygen is dispensed, smoking is prohibited (J.A. 224). The oxygen is stored separately from both flammable materials and sources of ignition and is prevented from being accidentally released (J.A. 225).

b. Secondly, the Administrator found that there was no sound basis for presently concluding that smoking aboard aircraft constitutes a health hazard for nonsmoking passengers (J.A. 225). The problem of whether smoking affecting the safety of nonsmoking passengers did warrant an "in-depth exploration"; however, "meaningful assessment of the magnitude of the possible

safety hazard" had to await completion of more extensive scientific inquiry, specifically considering the environment within a passenger-carrying aircraft" (J.A. 227). The effects of smoking on nonsmokers had not yet been studied in connection with the unique system of ventilation on passenger-carrying aircraft, which produces "an exchange of air in the aircraft * * approximately every three minutes during flight" (J.A. 225). "No technical studies concerning concentrations of gases or particle matter in environments similar to the modern well-ventilated aircraft have been presented to the FAA" (J.A. 227). Also, "[1]iterature does not reveal epidemiological evidence, i.e., a pattern of cause and effect among case histories, indicating that intermittent indirect exposure to tobacco smoke constitutes a major heath hazard" (Id.).

The Administrator was informed by his medical experts that for years doctors have been trying deliberately to instill medications into the inner areas of the lungs, "and have been hampered, if not defeated, by the very nature of the act of breathing. The problem is that the air in the deeper portions of the lungs does not actually leave the areas everytime one exhales.

* * * It takes many exchanges of 'new' air, which for the ill patient might contain moisture plus decongestants, before the doctor can get a good concentration of the drug where he wants it. Consequently, there would need to be heavy concentration of smoke and many, many exchanges of this heavy vapor before a person would get large quantities of contaminent deep into the lungs" (J.A. 226).

Concerning persons who suffer from allergies or diseases which may be aggravated by the presence of tobacco smoke, the Administrator observed that the problem for them in airplanes "is no greater than that which they must face in stores and other buildings open to the public, in other means of public conveyance and even when walking in the streets of some of our larger cities. Moreover, considering the rapid exchange of air in today's aircraft and its unique ventilation system, these passengers have an opportunity to seat themselves in a location where they will be able to breathe air effectively isolated from the smoke generated by other passengers. Although moving about the airplane may bring these passengers in contact with tobacco smoke, this exposure is no greater than that which they must face at an airport before and after their flight. * * * Therefore, I am persuaded that no emergency exists regarding the health of passengers with allergies or diseases which may be aggravated by possible irritation from tobacco smoke" (J.A. 227).

c. Third, the Administrator found unsupportable plaintiffs' contention that annoyance and alleged "unjust discrimination" against nonsmoking passengers constituted an "emergency" (J.A. 228). The Administrator pointed out that his emergency rule-making authority was limited to making regulations concerning safety. Annoyance and discomfort of passengers were "unrelated to safety in air commerce and, therefore, not the proper subject for FAA regulation" (Id.). Additionally, "no economic discrimination could result in an emergency in respect of safety in air commerce (Id.).

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d. Finally, the Administrator determined that smoking by flight crew members does not reduce the high level of safety required in the public interest for passenger-carrying aircraft (J.A. 228). This matter was currently under FAA study to determine whether any possible rule-making in this regard was necessary. However, "[n]o substantial evidence has yet been obtained by the FAA demonstrating that the presence of the toxic substances contained in tobacco smoke in the crew compartment, or the smoking of cigarettes by members of the crew, can cause a decrease in night vision sensitivity, reaction time, judgment or decisionmaking capabilities, to a degree that the high level of safety required in the public interest for passenger-carrying aircraft would be so reduced as to constitute a hazard to air safety" (Id.). There was some evidence that pilots who smoke cigarettes with deep inhalation may suffer some decrease in night vision, but "pilots in civil aviation do not depend upon high night vision sensitivity for safe operation" (Id.). They work with brightly colored lights and constantly monitor their lighted instrument panels, which necessarily impairs their night vision. (Id.)

Consequently, for all these reasons, the Administrator concluded in his Statement of Reasons that "no emergency existed in this matter in respect of safety in air commerce" (J.A. 229).

Following submission of this Statement of Reasons, the district court (Waddy, J.), on August 31, 1970, granted the Government's motion for summary judgment, finding "that the defendant Administrator's determination in this matter has a

basis in fact and is not arbitrary and capricious" (J.A. 291). It is from this decision that plaintiffs appeal.

In the meantime, as this litigation has progressed, the agency has continued with its normal rule-making procedures concerning the possible implementation of a rule regulating smoking on aircraft. FAA Docket Numbers 10012 and 10033. Large numbers of comments have been received from the public, medical authorities, pilots and pilots' organizations, and the airline industry on this problem. These comments, representing all viewpoints, are now being examined by the agency. In addition, the agency is conducting technical studies into the effects of smoking on passengers and airplane safety.

STATUTES INVOLVED

49 U.S.C. 1303 provides:

In the exercise and performance of his powers and duties under this chapter the Administrator shall consider the following among other things as being in the public interest:

(a) the regulation of air commerce in such manner as to best promote its development and safety and fulfill the requirements of national defense;

49 U.S.C. 1421 provides:

(a) The Administrator is empowered and it shall be his duty to promote safety of flight of civil aircraft in air commerce by prescribing and revising from time to time:

2/ The administrative docket was not made part of the record in this case.

- (6) Such reasonable rules and regulations or minimum standards, governing other practices, methods and procedure, as the Administration may find necessary to provide adequately for national security and safety in air commerce.
- (b) In prescribing standards, rules and regulations, and in issuing certificates under this subchapter, the Administrator shall give full consideration to the duty resting upon air carriers to perform their services with the highest possible degree of safety in the public interest * * * The Administrator shall exercise and perform his powers and duties under this chapter in such manner as will best tend to reduce or eliminate the possibility of, or recurrence of, accidents in air transportation, but shall not deem himself required to give preference to either air transportation or other air commerce in the administration and enforcement of this subchapter.

49 U.S.C. 1485(a) provides:

Except as otherwise provided in this chapter, all orders, rules, and regulations of the Board or the Administrator shall take effect within such reasonable time as the Board or Administrator may prescribe, and shall continue in force until their further order, rule, or regulation, or for a specified period of time, as shall be prescribed in the order, rule, or regulation: Provided, That whenever the Administrator is of the opinion that an emergency requiring immediate action exists in respect of safety in air commerce, the Administrator is authorized, either upon complaint or his own initiative without complaint, at once, if he. so orders, without answer or other form of pleading by the interested person or persons, and with or without notice, hearing, or the making or filing of a report, to make such just and reasonable orders, rules, or regulations, as may be essential in the interest of safety in air commerce to meet such emergency. Provided further, That the Administrator shall immediately initiate proceedings relating to the matters embraced in any such order, rule, or regulation, and shall, insofar as practicable, give preference to such proceedings over all others under this chapter.

SUMMARY OF ARGUMENT

We shall demonstrate below that the matter of what constitutes an "emergency" requiring the invocation of the Administrator's summary powers under 49 U.S.C. 1485(a) rests within the discretion of the Administrator. The mere showing of a possible risk to safety does not obligate him to declare an emergency; he has discretion to deal with the problem under the normal procedures for issuing safety rules instead of the emergency procedures of 49 U.S.C. 1485(a).

We shall further show that the Administrator has not abused his discretion here in determining that the problem of smoking in airplanes does not constitute a safety "emergency", but is merely appropriate for ordinary rule-making. The standard of judicial review of the Administrator's actions under 49 U.S.C. 1485(a) -- a statute permitting him to act without notice, hearing, or the making of a report -- is exceeding narrow, and is confined to merely a determination of whether the result reached by the Administrator is reasonable. However, the Administrator does not need the protection of this narrow scope of review in the instant case to sustain his actions, for substantial evidence supporting the reasonableness of the Administrator's determination of no emergency is amply provided by the materials which plaintiffs have submitted. These materials alone show the reasonableness of the Administrator's determination. Additionally, the reasonableness of the Administrator's determination is also shown by the expertise and information in his files which he used in making his determination. Consequently, we submit, the

Administrator's determination that smoking on airplanes does not constitute an emergency is fully reasonable, and he has not abused his discretion.

ARGUMENT

I

THE MATTER OF WHAT CONSTITUTES AN "EMERGENCY" REQUIRING THE INVOCATION OF THE ADMINISTRATOR'S SUMMARY POWERS RESTS WITHIN THE DISCRETION OF THE ADMINISTRATOR.

The Administrator of the Federal Aviation Administration is authorized by 49 U.S.C. 1421(a) "to promote safety of flight of civil aircraft in air commerce by prescribing and revising from time to time * * * [s]uch reasonable rules and regulations or minimum standards, governing other practices, methods and procedures, as the Administration may find necessary to provide adequately for national security and safety in air commerce."

In performing this duty, according to 49 U.S.C. 1421(b) he "shall give full consideration to the duty resting upon air carriers to perform their services with the highest possible degree of safety in the public interest * * *," and "shall exercise and perform his powers and duties under this chapter in such manner as will best tend to reduce or eliminate the possibility of, or recurrence of, accidents in air transportation * * * *."

Thus, the Administrator is given power to promulgate rules to obtain "the highest possible degree of safety in the public interest." In addition to this power, however, the Administrator

is given extraordinary power to deal with "emergency" situations. 49 U.S.C. 1485(a) provides, that while in the normal case "all orders, rules, and regulations * * * shall take effect within such reasonable time as the * * * Administrator may prescribe," the Administrator in the case of an emergency may exercise immediate and summary rule-making power:

[W]henever the Administrator is of the opinion that an emergency requiring immediate action exists in respect of safety in air commerce, the Administrator is authorized, either upon complaint or his own initiative without complaint, at once, if he so orders, without answer or other form of pleading by the interested person or persons, and with or without notice, hearing, or the making or filing of a report, to make such just and reasonable orders, rules, or regulations, as may be essential in the interest of safety in air commerce to meet such emergency.

If such emergency action is invoked, the Administrator shall then, after he has taken such action, "immediately initiate proceedings relating to the matters embraced in any such order, rule, or regulation," and insofar as practicable give preference to such proceedings. In short, 49 U.S.C. 1485(a) gives the Administrator summary power to issue a rule "with or without notice, hearing, or the making or filing of a report" to deal with an emergency; the only restriction upon the Administrator's power is that after such emergency rule has been issued he shall then "immediately initiate proceedings."

What clearly appears from this statutory scheme is that the Administrator possesses two kinds of rule-making authority: the power to promulgate ordinary safety rules, and the power to promulgate rules to deal with a safety "emergency." The

statute gives the Administrator authority to deal with normal safety problems through regular rule making, e.g., Air Lines

Pilots Association v. Quesada, 276 F. 2d 892 (C.A. 2, 1960)

(rule barring pilots over 60 from air carrier operations) and in addition gives him extraordinary powers to deal with safety "emergencies." 3/

Plaintiffs in the present case assert that the Administrator was obligated to invoke his summary emergency powers under 49 U.S.C. 1485(a) to impose an immediate ban upon smoking in airplanes. They take the position (Brief, pp. 13-21) that the submission of material indicating the mere possibility of a risk to safety requires as a matter of law that the Administrator institute an immediate emergency rule. In such a case the Administrator, plaintiffs assert, is obligated to take action "before all the facts have been gathered" (Id., p. 20).

Granted that in some cases the showing of the mere potentiality of a safety hazard may form a sufficient basis for the Administrator to take emergency action under 49 U.S.C. 1485(a),
the question presented here is whether it rests within the
Administrator's discretion to take such action or whether, as
plaintiffs assert, he is obligated as a matter of law to take
such action. The answer to this question is clear: the matter
lies within the discretion of the Administrator. Indeed, this
is made explicit by 49 U.S.C. 1485(a): an emergency rule is

^{3/} This Court has remarked upon the extraordinary nature of the power granted by the statute to deal with emergencies affecting safety. See Standard Airlines v. Civil Aeronautics Board, 85 U.S. App. D.C. 29, 177 F. 2d 18 (1949).

authorized to be issued "whenever the Administrator is of the opinion that an emergency requiring immediate action exists in respect of safety in air commerce." (Emphasis supplied.) The Administrator has the authority under the statutes to promulgate both ordinary safety rules and emergency safety rules. Every safety rule, of course, whether an ordinary rule or an emergency rule, is designed to prevent a potential safety hazard. A choice must be made as to whether the potential risk to safety constitutes an "emergency requiring immediate action" or whether the risk is sufficiently remote so that, like the rule limiting the age of pilots (Air Lines Pilots Association v. Quesada, supra,), there is time for the normal rule-making procedures to be followed. This choice has been vested by 49 U.S.C. 1485 in "the opinion" of the Administrator.

It should be noted in this regard that a risk to safety may be involved in the promulgation itself of an emergency rule. The Administrator is authorized to issue such a rule immediately and without soliciting opposing views; as plaintiffs state, he has the authority to act "before all the facts have been gathered" (Brief, p. 20). There is the danger that a rule issued on such a basis can create a worse safety hazard than the hazard it is designed to remedy. For instance, a rule banning smoking by crew members possibly could cause some crew members to become so tense during a flight as to cause more of a danger than the smoking itself. Or, a ban on smoking by passengers could prove so difficult to enforce as to distract crew members from their duties in flying the aircraft. Such a ban might also drive some

passengers to smoking undetected in the lavatories -- where, due to the availability of paper products, the risk of fire would be far greater than merely smoking in their seats. All the facts not having been gathered, one cannot rule out these possibilities.

In short, the problem is not so simple as plaintiffs would have this Court believe. "To act in haste, repent at leisure, is not a sound motto for an administrative agency." Pennsylvania Gas & Water Co. v. Federal Power Commission, U.S. App. D.C. ____, 427 F. 2d 568, 575 (1970). Risks to safety can be involved in any course of action, whether affirmative or negative. The question as to whether to act on an emergency basis without all the facts, as opposed to acting through normal rule-making procedures, involves a balancing of the competing risks — an inherently discretionary type of judgment. Thus, Congress wisely specified that an emergency rule was to be issued "whenever the Administrator is of the opinion" that such a rule was necessary.

In sum, the matter of what constitutes an "emergency" under 49 U.S.C. 1485(a) lies within the discretion of the Administrator, and can be set aside only if he has abused that discretion. The mere showing of a possible risk to safety does not as a matter of law obligate the Administrator to forego the normal procedure for the implementation of safety rules and require him to act on an emergency basis.

THE ADMINISTRATOR DID NOT ABUSE HIS DISCRETION IN DETERMINING THAT NO SAFETY "EMERGENCY" EXISTED.

Plaintiffs, in support of their petitions that the Secretary exercise his emergency powers to ban smoking on airplanes, attached various scientific articles on the effects of smoking, and letters complaining about smoking in airplanes. Additionally, from the course of more than thirty years of commercial flying, they pointed to three airplane accidents in which smoking allegedly was a possible cause of the accident. The Administrator, upon consideration of this material, and the agency's knowledge and expertise, determined that no "emergency" existed, and declined to exercise his summary rule-making powers under 49 U.S.C. 1485(a) to issue an immediate rule to ban smoking. Instead, the Administrator determined that the agency's ordinary rule-making procedures would be sufficient to deal with those problems raised by the petition which might merit the promulgation of new rules. As we shall now show, the standard for judicial review of the Administrator's determination is extremely narrow. But whatever the standard, the Administrator's refusal to act under his emergency powers did not constitute an abuse of his discretion.

A. Judicial Review is Limited to a Determination Whether the Result Reached by the Administrator is Reasonable.

It is clear that the rule-making authority of 49 U.S.C. 1485(a) is not required to be exercised "on the record after opportunity for agency hearing," Administrative Procedure Act, Section 4 (5 U.S.C. 553); indeed 49 U.S.C. 1485(a) explicitly

states that no hearing is required. Consequently, the rulemaking authority under 49 U.S.C. 1485(a) is at least as broad as the "informal" rule-making procedure where no hearing is required. See Automotive Parts & Accessories Association v. Boyd, 132 U.S. App. D.C. 200, 407 F. 2d 330 (1968). In exercising informal rule-making authority, an administrator is not restricted to his examination of the evidence submitted, but may proceed by informal consultation with his staff members and interested parties. Siegel v. Atomic Energy Commission, 130 U.S. App. D.C. 37, 400 F. 2d 778, 785-786 (1968); American Airlines, Inc. v. Civil Aeronautics Board, 123 U.S. App. D.C. 310, 317, 359 F. 2d 624, 631 (1966) (en banc), certiorari denied, 385 U.S. 843. "Informal written or oral consultation with affected parties or with advisory committees is the mainstay of rule-making procedure." l Davis, Administrative Law, Sec. 6.02 (1958 ed.). Judicial review of the informal rule-making process is strictly limited, and the courts do not review for "substantial evidence." Siegel v. Atomic Energy Commission, supra; California Citizens Bank Ass'n v. United States, 375 F. 2d 43, 54 (C.A. 9, 1967), certiorari denied, 389 U.S. 844; Boating Industry Assin v. Boyd, 409 F. 2d 408, 411 (C.A. 7, 1969); Air Line Pilots Assin v. Quesada, 276 F. 2d 892, 898 (C.A. 2, 1960). Rather, the judicial function "is to see only that the result is reasonable and within the range of authority conveyed, that it has been formulated in the manner prescribed, and that the disappointed have had the opportunity provided by Congress to try to make their views

prevail." Automotive Parts & Accessories Association v. Boyd, supra, at 132 U.S. App. D.C. 213, 407 F. 2d 343.

However, the Administrator's rule-making under 49 U.S.C. 1485(a) here is much broader than simply informal rule-making authority. For not only may the authority under 49 U.S.C. 1485(a) be exercised without a hearing, but the statute specifies that neither notice nor the making or filing of a report in required. Consequently, the Administrator is released by 49 U.S.C. 1485(a) from even the limited requirements for informal rule-making of Section 4 of the Administrative Procedure Act (5 U.S.C. 553) that he allow notice and opportunity to participate, and he is also not required to issue a statement explaining the basis of his action. Furthermore, in a Section 4 informal rule-making proceeding "there is a record * * * available for filing in court. It consists of the submissions made in response to the invitations issued for written comments." Automotive Parts & Accessories Association v. Boyd, supra, at 132 U.S. App. D.C. 206, 409 F. 2d 336. No such record need exist with respect to proceedings under 49 U.S.C. 1485(a), since no notice is required.4/

It is therefore apparent that the scope of judicial review of proceedings under 49 U.S.C. 1485(a) is necessarily much narrower than the already narrow scope of judicial review of informal rule making. For a court cannot examine whether the

The lack of a record under 49 U.S.C. 1485(a) should be contrasted with the record created when the FAA proceeds under its normal rule-making powers in 49 U.S.C. 1421. In the instant case, following the agency's determination to proceed under it normal rule-making authority on the smoking issue, and issuance of its

Administrator has allowed interested parties an opportunity to present their views, since no such opportunity is required. A court likewise cannot review the rationality of the Administrator's statement of reasons for his actions, since no such statement is required. And since no record is created, there is no record to review. All that is before a court for review under 49 U.S.C. 1485(a) is the result reached by the agency. If that

4/ (Cont'd) Advance Notice of Public Rule-Making, a voluminous administrative record has been created. See p. 12, supra.

5/ Plaintiffs refer to Public Service Commission of New York v. Federal Power Commission, U.S. App. D.C. F. 2d No. 23,446, July 29, 1970, where this Court reversed an order of the Federal Power Commission because the Commission had failed to (id. at Slip Op. 6):

set forth convincing reasons for its determination in sufficient detail to allow the validity of these reasons to be critically examined by the parties adversely affected and to allow this Court to pass on the reasonableness of the Commission's conclusion.

result is reasonable, the administrative action must be sustained.

Cf. Automotive Parts & Accessories Association v. Boyd, supra. 6/

B. The Administrator's Determination that Smoking on Airplanes did not Constitute a Safety Emergency is Reasonable.

Preliminarily, we wish to observe that plaintiffs time and again question in their brief whether there is any value at all in permitting smoking in airplanes. E.g., Brief, p. 31. Of course, the same question can be asked as to why society permits smoking -- or drinking, for that matter -- in other contexts. It is common knowledge that smoking has caused numerous fires in homes, office buildings, and apartments -- injuring and killing smokers and nonsmokers alike. Persons who have been drinking are responsible for innumerable traffic accidents and crimes. With both smoking and drinking the person who indulges incurs a risk to his own health. Yet society, with only a modicum of control, permits persons to engage in these activities despite the high social cost -- which must be paid by those who do not participate as well as those who participate. The reason society -- instead of declaring an "emergency" -- permits these activities to continue must be that society places a value on the individual being free to enjoy himself. Indeed, society

^{6/} The district court ruled that the standard of review was whether the Administrator's determination had a "basis in fact" (J.A. 291). We believe the district court thus correctly recognized the narrowness of the scope of review. However, a better formulation of the standard is whether the result is reasonable.

^{7/} In 1968, of some 974,000 building fires in the United States, 144,000 were caused by smoking or matches. 1970 Statistical Abstract of the United States, p. 464.

values the freedom of the individual to enjoy himself so highly that, as in the case of smoking and drinking, it is willing to incur some obvious social costs in order to permit this freedom. It is against this background, therefore, that the reasonableness of the Administrator's determination that no emergency exists must be viewed.

1. The Administrator's determination is supported by plaintiffs' own evidence. While we have demonstrated above, at pp. 20-24, the extraordinarily narrow scope of judicial review of an administrative determination under 49 U.S.C. 1485(a), even under the broadest of all tests -- substantial evidence -- the Administrator's action in the present case must be upheld. This is because the material submitted by the plaintiffs themselves constitute substantial evidence supporting the determination that no safety "emergency" existed.

^{8/} It should be noted that the petitions before the FAA (J.A. 15, 54) are directed only towards the imposition of an emergency ban under 49 U.S.C. 1485(a). See J.A. 18. If the petitions instead be viewed as alternatively a request for ordinary rule-making under 49 U.S.C. 1421, the Administrator has in fact responded to them by initiating an Advance Notice of Proposed Rule-Making (J.A. 207). On two matters presented by the petitions — the alleged fire danger and the matter of annoyance and discomfort to passengers — the Advance Notice rejects plaintiffs' contentions outright. Thus, the Advance Notice, as a preliminary matter, partially grants and partially denies the petitions — if they be viewed as a request for ordinary rule-making. An appeal at this time to the courts from a partial rejection of a request for ordinary rule-making would, of course, be interlocutory. Apparently recognizing this, plaintiffs on this appeal only challenge the Administrator's determination that no emergency existed (Brief, p. 2).

a. The primary ground asserted in the brief for the imposition of an emergency rule is that lighted cigarettes, cigars, and pipes create an imminent and serious threat of fire or fire-induced smoke in the aircraft (Brief, pp. 22-27). In response to this, the Administrator observed, "Millions of miles have been flown over many years without passenger smoking creating a safety problem. There has never been an accident attributable to smoking by passengers" (J.A. 222). Indeed, plaintiffs, out of the more than thirty years of commercial aviation, point only to three accidents where, they contend, smoking possibly was implicated. And, the fact of the matter is that in not one of these accidents did an official investigation into the cause of the accident attribute the cause to smoking.

Of the three accidents, two involved fatal air crashes.

The first was a crash of a United Airlines Viscount on 1964
caused by an inflight cabin fire. The official Civil Aeronautics
Board investigation of the crash concluded only that "the probable
cause of this accident was an uncontrollable inflight fire of
undetermined origin" in the passenger compartment (J.A. 110).

Plaintiffs attempt to implicate smoking as a cause by noting
that the Board indicated that lighter fluid was one of three
possible fuels which could have been involved in the fire. However, the Board also concluded that "lighter fluid was not known
to be aboard in sufficient quantity to produce the amount of fire
experienced"(J.A. 107). The Board could not determine the cause
of the crash. Instead, it observed, "Substantial aircraft cabin
fires are such a rare occurrence that a most unusual and possibly

not readily conceivable circumstance is visualized in this instance" (J.A. 109).

The second accident was the collision of a Piedmont B-727 and a private plane in 1967. The transcription of the radio communications immediately prior to the collision (J.A. 120-121) indicates that the crew was jokingly discussing a cigarette which was on fire in an ashtray, and plaintiffs therefore suggest that the crash could have been caused by the Piedmont crew becoming distracted at the time they should have seen the Cessna (Brief, p. 24). If this was in fact the cause of the collision, it may be more indicative of gross negligence on the part of the entire crew than the hazards of smoking. However, significantly, the Aircraft Accident Report (neither the excerpts cited by plaintiffs in their exhibit at J.A. 115-119 nor the complete version in the FAA files 2/) attributes the accident to this cause. Indeed, plaintiffs in their exhibit quote the statement of Piedmont's president that "[s]moking is not a safety factor in an aircraft of this type, and there is no evidence to suggest that smoking contributed as a cause to this accident" (J.A. 120).

It was shown in the cockpit visibility study that each aircraft could have been visible to the flightcrew of the other aircraft for approximately 35 seconds prior to the collision, providing there were no intervening clouds. Although witnesses reported that the collision occurred in an area clear of clouds, the evidence indicates that both aircraft would have been operating in and out of broken clouds just prior to the accident. Therefore,

^{9/} Only excerpts from the Aircraft Accident Report concerning the collision are reprinted in plaintiffs' exhibit (J.A. 115-119). Omitted is p. 37 of the report, which contains the following paragraph:

The third incident was not a crash, but an emergency evacuation of a TWA B-707 jet in 1963 occurring while the plane was on the ground taxiing to take-off. The evacuation was necessitated by smoke resulting from a quickly extinguished cabin fire. No persons were injured. Plaintiffs refer to what they call a "Report of the CAB Bureau of Safety" (Brief, p. 23), which contained the statement at p. 3 of the report that "fire was originally attributed to a smoldering cigarette." This report, however, was prepared by a Mr. John J. Carroll, a Civil Aeronautics Board "Human Factors Specialist" (See Report, p. 3). Plaintiffs also refer to a paper by members of the FAA's Office of Aviation Medicine entitled "Human Factors of Emergency Evacuation," which stated, "Apparently, a lighted cigarette butt started the cabin fire" (J.A. 28-29). Neither of these documents represents an analysis of the incident from the point of view of determining causation -- compare the reports at J.A. 102 and J.A. 115. And neither of them discusses the fact that it is highly likely that the no smoking sign was on at the time the accident occurred, since the sign is required to be turned on for each take-off.

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^{9/(}Cont'd) in this situation, the "see and be seen"
 concept can only be considered inapplicable.
 To observe visually and avoid another aircraft
 under those existing conditions of weather and
 the high rates of closure, from a practical
 standpoint, is nearly impossible. Also, neither
 flight was aware of the presence of the other
 and, therefore, would not be exerting any in creased outside vigilance for conflicting traf fic. In fact, it is believed that attention
 outside of the cockpits of both aircraft would
 have been somewhat reduced because of the
 higher workloads associated with the departure
 and approach flight phases.

14 C.F.R. 121.317 (See also J.A. 26). Consequently, these materials constitute, as the FAA found, "no more than conjecture that the fire was caused by a cigarette, cigar, or pipe" (J.A. 207).

In short, of some more than thirty years of commercial flying, plaintiffs are only able to point to three incidents where the possibility is even suggested that smoking is involved -- and in none of these incidents has it in fact been determined that smoking was the probable cause.

It is indeed true, as plaintiffs state, that these three incidents can be considered "at least evidence of how fire and fire induced smoke can be caused by smoking on airplanes" (Brief, p. 26). However, to determine whether a safety emergency "requiring immediate action" exists within the meaning of 49 U.S.C. 1485(a), it is necessary to make a judgment as to the degree of likelihood of the risk materializing. One, of course, can always imagine hypothetical situations where smoking does cause a fatal fire in an aircraft. But one can always imagine all sorts of remote possibilities. Thus, for instance, when planes fly in clouds or at night, they incur the risk that the instrument flight system might fail; the electric system which provides lights for the passengers and heats the kitchenette create a risk of fire; the failure of airlines to conduct a complete search of all boarding passengers leads to the risk of concealed weapons and the danger of hijacking; the service of alcoholic beverages to passengers creates the danger of passenger unruliness distracting members of the crew from flying. In short,

there will always be some risk in flying, no matter how remote the possibility of it materializing. That, however, obviously does not make all such risks emergencies, requiring an immediate ban without notice and hearing of flying at night or in clouds, of passenger lights and kitchenettes, of serving alcoholic beverages to passengers, and of letting on board any passenger who has not been thoroughly searched. The matter of what constitutes an emergency requires a judgment as to the imminence of the risk materializing.

Here, in more than thirty years of commercial aviation plaintiffs have only found the three incidents discussed above to indicate the likelihood of smoking causing an aviation accident — and in each of these incidents the relationship of smoking is, at best, highly speculative. Certainly, in light of this experience, it is not unreasonable for the Administrator to come to the conclusion that the danger of smoking causing a fire-connected accident is so remote as not to constitute an emergency.

b. The second ground argued in the brief to show an emergency is that smoking by flight crew members during operations allegedly dangerously impairs the visual and mental acuity of crew members (Brief, pp. 27-28). The matter of whether any possible hazard is created by smoking by crew members is already under study by the FAA with a view to determining whether any rule-making action is warranted (J.A. 216, 228). However, the Administrator is of the opinion that the material presented with the petition in this regard does not indicate the existence of an "emergency" (J.A. 215-216, 228). The Administrator explained

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that "[n]o substantial evidence has yet been obtained by the FAA demonstrating that the presence of the toxic substances contained in tobacco smoke in the crew compartment, or the smoking of cigarettes by members of the crew, can cause a decreased in night vision sensitivity, reaction time, judgment or decision-making capabilities to a degree that the high level of safety required in the public interest for passenger-carrying aircraft would be so reduced as to constitute a hazard to air safety" (J.A. 228).

No such "substantial evidence" is provided by the materials submitted by plaintiffs. These materials are to the effect that smoking causes an increase in carbon monoxide within the smoker, and thus to some extent dulls his vision and mental alertness. However, the material also indicates that these conclusions are of a tentative nature, more study is needed, and the degree of risk to normal, healthy crew members appears to be minimal. For instance, it is stated that "facts must be firmly established by additional research before safe environmental standards for carbon monoxide can be set" (J.A. 125). Moreover, it is recognized that normal persons have some degree of tolerance for increased levels of carbon monoxide (J.A. 130). And the articles merely warn flight crew members against "excessive" smoking, particularly before a flight (J.A. 157).

Assuming that some degree of loss of visual and mental acuity may be an effect of smoking, the question here is whether the effect on the smoking airline crew member is of such a degree as to reduce the safety of aircraft operations so as to create "an emergency requiring immediate action * * * in respect of

safety in air commerce." 49 U.S.C. 1485(a). The carbon monoxide effects of smoking, of course, are not confined to airline crew members; automobile drivers can be affected as well (see, e.g., J.A. 126, 129). Yet, we are unaware of any State that has banned smoking by drivers -- not to speak of acting on an emergency basis in that regard. Moreover, as previously mentioned, pp. 26-30, supra, not one airplane crash has been attributed to smoking. Certainly, then, it is reasonable for the Administrator to conclude that no emergency exists in this regard.

c. The third ground presented in the brief is that tobacco smoke within an airplane creates a danger to the health of nonsmoking passengers to such a degree as to constitute an "emergency" (Brief, pp. 28-31). In support of this contention the plaintiffs have submitted various scientific articles to the effect that the deleterious effects of smoking may not be confined solely to the smoker, but can affect nonsmokers who breathe the smoke. The Administrator considered the material presented on this point to be of sufficient merit as to justify the start of rule-making procedures on this matter; however, the Administrator declined to find that the danger was of sufficient degree as to constitute an "emergency" (J.A. 207-208, 215, 225-228). The Administrator noted, as he was advised by his experts, that "there is no sound basis to support petitioners' assertion that smoking by passengers in passenger-carrying civil aircraft poses a substantial threat to the health of non-smoking passengers" (J.A. 225).

The articles submitted by plaintiffs do not provide this sound basis. Time and again these articles emphasize the tentative

nature of their conclusions, and the need for more study. Thus, one article concludes that cigarette smoke "may" represent a health problem for nonsmokers, and advises that it is "urgent that careful research studies determine the extent and varieties of risks" (J.A. 45). Another notes, "It would be interesting to know whether the severity of illness is * * * related to the amount of smoke in the environment" (J.A. 38). None of these articles, of course, is based on a study of the peculiar conditions of smoking on an airplane with the special types of ventilating systems airplanes have. 10/

Plaintiffs also rely on numerous letters from nonsmokers complaining about the effect smoking in airplanes has had on them. Their letters, however, indicate that many of these people suffer adverse reactions from cigarette smoking in any kind of environment, see, e.g., J.A. 59-62, 68, 69; certainly, an aviation "emergency" is not presented if non-smokers in airplanes are no more subject to the hazards of smoking than they are on the ground.

Thus, the material submitted by plaintiffs, while indicating the possible need for a rule on this subject, hardly indicates that the danger to the safety of passengers from smoking by

^{10/} Plaintiffs at p. 31 of their brief, fn. 4, calculate the amount of airspace in a Boeing 707, and state that each person has 54 cubic feet of airspace. This calculation, however, itself is of little significance in evaluating the effects of smoking on passengers — the rate of ventilation would be a much more significant factor.

their fellow passengers is so extraordinary as to require emergency rule-making instead of the normal rule-making procedures. 11/

In sum, despite the fact that judicial review of a determination under 49 U.S.C. 1485(a) is strictly limited to an examination of the reasonableness of the result — without the agency having to create a record to justify its action or a report to explain it — under any test of administrative action the Administrator's action here should be upheld as reasonable. For the evidence submitted by the plaintiffs themselves fails to demonstrate the existence of a safety emergency requiring immediate action.

knowledge and expertise of the agency. In the present case, in light of the narrow scope of judicial review, the agency is not confined to the material submitted by plaintiffs to demonstrate the reasonableness of its determination of no emergency. For even in ordinary informal rule-making, the agency is "not confined to evidence presented in some formal manner. It may act * * * upon the basis of information in its own files, and upon the knowledge and expertise of the agency," and the agency may not be compelled "to produce * * * the other evidence upon which it

ll/Another ground presented in the petition in claiming that an emergency exists is that smoking allegedly is an annoyance and discomfort to, and discrimination against, the nonsmoking passengers. (A smoker, of course, could argue that a ban on smoking constitutes an annoyance and discomfort to and discrimination against smoking passengers.) Clearly, matters of annoyance, discomfort, and discrimination do not constitute "an emergency requiring immediate action * * * in respect of safety in air commerce." 49 U.S.C. 1485(a). This point has apparently been abandoned by plaintiffs in their brief.

relied in making its decision * * *." California Citizens Bank

Association v. United States, 375 F. 2d 43, 54 (C.A. 9, 1967),

certiorari denied, 389 U.S. 844; see also Siegel v. Atomic

Energy Commission, 130 U.S. App. D.C. 37, 400 F. 2d 778 (1968).

And, of course, as we have noted at pp. 20-24, supra, this is

particularly true concerning the extraordinary authority under

49 U.S.C. 1485(a). Consequently, the reasonableness of the

agency's determination here is demonstrated by information of

this nature, in addition to the material submitted by plaintiffs,

discussed above at pp. 25-34.

a. With respect to his finding that smoking did not constitute an emergency concerning the danger of fire or fire-induced smoke (J.A. 222-225), the Administrator pointed out that at those times when there is a possibility of fuel fumes entering the aircraft -- take-off, landing, or turbulence -- the no smoking sign is to be lighted (J.A. 222); that under current fire-resistance standards for interior cabin materials, such materials are not easily ignited by smokers and that, if ignited, they are slow-burning and self-extinguishing (J.A. 223); that, in any event, a cabin fire created by a cigarette would be easily detectable and controllable with the in-flight fire extinguishers (Id.); and that the in-flight ventilation system is adequate to control the smoke from such a fire (J.A. 223-224). One can always conceive of possible situations, of course, as plaintiffs do in their brief, where the improbable happens, and none of

these factors prevent a serious fire. But, as we have emphasized, the question here is one of the degree of likelihood and these factors -- as well as the fact that "[m]illions of miles have been flown over many years without smoking creating a safety problem" (J.A. 222) -- indicate that the possibility of smoking causing an accident is extremely remote. At the least they indicate it was reasonable for the Administrator not to declare an emergency and for him to conclude that smoking does not create a. "serious or imminent" danger of fire or fire-induced smoke (J.A. 222).

12/ Plaintiffs argue (Br., p. 26) that smoking creates a danger because of the possibility of turbulence causing a fuel leak at the time that passengers are smoking. However, the Administrator points out that if the turbulence were of sufficient severity to cause a fuel leak, prior damage to the aircraft would already have resulted in a loss of control of the aircraft sufficient for the flight crew to declare an emergency and light the no smoking sign. Moreover, it is customary for airlines to light the no smoking sign when heavy turbulence is encountered (J.A. 222).

Plaintiffs also argue that the agency's own statistics indicate that tobacco normally burns, when not being puffed, at a temperature in excess of the temperature at which interior cabin materials are tested (Br., pp. 22, 26). The Administrator, however, does not assert that interior cabin materials are totally flame-proof; rather, that a fire caused by a burning cigarette coal would be "slow burning and easily extinguished" (J.A. 224).

Plaintiffs also contend that the Administrator underestimates the danger of smoke from a fire in an airplane (Br., pp. 26-27), and refer to the TWA B-707 incident (see p. 28, supra) and the United Viscount crash (see p. 26, supra). However, the Administrator notes that with respect to the B-707 incident -- an emergency evacuation on the ground -- the in-flight ventilation system was not in operation; "had the incident occurred in flight, there would have been little, if any, effect from the smoke because it would have been discharged overboard as rapidly as it was generated" (J.A. 223-224). With respect to the United Viscount crash, the crash was caused by "an uncontrollable inflight fire of undetermined origin" (J.A. 110) -- not a smoking-caused fire -- and an uncontrollable fire obviously would produce uncontrollable smoke.

- Concerning the effect of smoking on crew members, we have previously noted that plaintiffs! own material supports the Administrator's conclusion that "[n]o substantial evidence has yet been obtained by the FAA demonstrating that the presence of the toxic substances contained in tobacco smoke in the crew compartment, or the smoking of cigarettes by members of the crew, can cause a decrease in night vision sensitivity, reaction time, judgment or decision-making capabilities, to a degree that the high level of safety required in the public interest for passengercarrying aircraft would be so reduced as to constitute a hazard to air safety" (J.A. 228). Plaintiffs (Br., p. 28) particularly emphasize the argument that smoking dangerously reduces night vision. The Administrator, however, observed that pilots today in civil aviation do not depend upon high night-vision sensitivity for safe operation, as they work with brightly-lighted instrument panels, runways, and anti-collision lights. Id. Indeed, frequent reference to the brightly lit instruments inside the cockpit "of necessity impairs the ability of any pilot to adjust his eyes to the darkness outside." Id. Clearly, if one's night vision is already impaired by his working with bright lights, the effect of smoking on his night vision is of little consequence.
- c. On the matter of whether smoking on airplanes constitutes a health hazard to nonsmoking passengers, the Administrator observed that no information yet available to the agency indicated "a danger of loss of, or threat to, life or permanent injury to health due to exposure to tobacco smoke on board today's well-ventilated passenger-carrying aircraft" (J.A. 225). He pointed

out the importance of the ventilation system of aircraft, and noted that because of the ventilation system "[t]he occupants of a modern aircraft are provided better isolation from smoke, dust and odors than they are in their homes, automobiles, and other surface transportation systems." The Administrator noted that he had been advised by the FAA medical experts that the medical literature "does not reveal epidemiological evidence, i.e., a pattern of cause and effect among case histories, indicating that intermittent indirect exposure to tobacco smoke constitutes a major health hazard" (J.A. 227). Also, the problem created by smoking on airplanes "for persons suffering from allergies or from diseases which may be aggravated by the possible irritating effect of tobacco smoke is not greater than that which they must face in stores and other buildings open to the public, in other means of public conveyance and even when walking on the streets of some of our larger cities." Id.

Plaintiffs (Br., p. 29) attack the Administrator for determining that no emergency exists because none of the data establishes that tobacco smoke will cause death or permanent health damage to nonsmoking passengers. However, certainly the Administrator has discretion to determine that no emergency exists where there is no danger of death or permanent health damage. Surely, when nonsmokers necessarily must endure tobacco smoke in so many public places today, the Administrator can reasonably believe that no emergency exists when they encounter a similar situation in an airplane. This problem may be of sufficient merit to be worthy of rule-making -- hence the Administrator is

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in the process of considering a possible rule -- but the problem does not constitute an emergency.

In sum, the result reached by the Administrator -- that smoking on airplanes does not constitute an emergency -- is completely reasonable, and is neither arbitrary nor capricious.

The material submitted by the plaintiffs themselves fully supports the reasonableness of this determination. And additional support for the agency's determination is provided by the "information in its own files, and * * * the knowledge and expertise of the agency." California Citizens Bank Association v. United States, supra; Siegel v. Atomic Energy Commission, supra. The Administrator thus did not abuse his discretion in determining that smoking on airplanes did not constitute a safety emergency requiring the invocation of his extraordinary powers under 49 U.S.C. 1485(a).

CONCLUSION

For the foregoing reasons, the judgment of the district court should be affirmed.

Respectfully submitted,

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IN THE

UNITED STATES COURT OF APPEALS FOR THE DISTRICT OF COLUMBIA CIRCUIT

24,616

RALPH NADER, IRIS CLARK INGRAM, DORIS LIMONCELLI, MRS. HIRAM E. NEWBILL AND HENRIETTA R. WALKER,

Appellants.

v.

FEDERAL AVIATION ADMINISTRATION and HONORABLE JOHN H. SHAFFER, ADMINISTRATOR FEDERAL AVIATION ADMINISTRATION,

Appellees.

On Appeal from a Judgment of the United States District Court for the District of Columbia

REPLY BRIEF FOR APPELLANTS

entrolling to Constitution for the

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REPLY BRIEF FOR APPELLANTS

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It is fair to state, upon a reading of Appellee's brief, that there is no disagreement with the fundamental proposition that the Administrator of the Federal Aviation Administration is obligated by statute to take those actions which will guarantee the highest possible degree of safety in air travel. It is also apparent

that in meeting this obligation he has available two types of rule making authority. First, he may proceed with general rule making by promulgating proposed rules, holding hearings or soliciting comments or both, and issuing a final rule. Second he may proceed more expeditiously, even without hearing or notice, where an emergency respecting safety in air travel is involved. Finally, it is not disputed that either the use of expeditious rule making or the use of the longer more general rule making authority involves a discretionary act of the Administrator which upon review may not be disturbed unless the Administrator acted arbitrarily and capriciously—that is unless his actions were unreasonable.

In the instant case the Administrator was presented with evidence detailing safety hazards occuring as the result of smoking on airplanes. The evidence established that smoking created a risk of fire or fire induced on the airplane, that it created a risk of impairment of visual and mental acuity of the crew and that it created a risk of adverse health consequences to non-smoking passengers, particularly those with pre-existing illnesses. The Administrator studied this data for more than three months during which time many comments from the public were received by the Administrator. On March 25, 1970 the Administrator issued an Advanced Notice of Proposed Rule Making which denied that smoking created any risk of

fire or fire induced smoke on the airplane, ignored the question of impairment of visual and mental acuity of the crew and requested comments during the next 90 days on the health hazard to non-smoking passengers and on any possible solutions to the health problem which would allow smoking to continue on the airplane. Thus with respect to the fire dangers and the impairment of the crew's mental and visual abilities the Administrator has refused to invoke either the expeditious rule making authority or the general, slower rule making authority. With regard to the health risks of smoking the issue is whether the evidence presented warranted a more expeditious proceeding than the advanced notice of proposed rule making which may lead to rule making.

In papers filed with the District Court (Ct. App. 216,228), the Administrator announced that this issue is still under study but to date no formal action has been taken.

Although no formal denial has been made by the Administrator with respect to the risk created by impairment of visual and mental acuity of the crew, the Administrator's delay of more than nine months in responding to a danger of that magnitude is clearly the equivalent of a denial of any relief. Cf. Environmental Defense Fund. v. Hardin, U.S. App. D.C. , 428 F.2d 1093, 1099 (1970).

The Administrator's counsel suggests (Brief, p. 25, fn. 8) that the pending rule making proceedings are considering these two factors. This is clearly in error (Jt. App. 207-208).

As a practical matter at this time, nearly a year from when the original petition was filed and after the receipt by the Administrator of thousands of comments from the general public the issue of whether expeditious rule making or the slower more general rule making procedures should have been used is not critical. The Administrator has had a sufficient time to study the data submitted by appellants. The issue is whether he applied the proper standard in rejecting that data as insufficient to warrant a ban on smoking on airplanes. If subsequent data should prove the smoking ban is no longer required for the highest possible safety the Administrator can issue a new rule relaxing or eliminating the ban. See, for instance, 35 Fed. Reg. 16468 (October 22, 1970) where the Administrator modified a limitation issued in an expedited rule making earlier this year on recommended flap operating speeds for the Boeing 747 by authorizing higher maximum speeds.

The Administrator in his brief states the issue here as follows:

Granted that in some cases the showing of the mere potentiality of a safety hazard may form a sufficient basis for the Administrator to take emergency action under 49 U.S.C. 1485(a), the question presented here is whether it rests within the Administrator's discretion to take such action or whether, as plaintiffs assert, he is obligated as a matter of law to take such action.

This is not, we submit, what this litigation is about. The issue is upon what basis may the Administrator refuse to take action to eliminate a practice in air travel when that practice is shown to

create a potential safety hazard. As we understand, the Administrator as judged by his deeds, his response is that a mere potentiality of a safety hazard is insufficient to warrant action and he is not required to act unless the safety risk is proven by specific examples where smoking has in fact caused airplane accidents. It is the application of this standard to the instant case which is at the heart of the dispute between the parties.

It is appellants' conclusion that once a potential safety hazard is identified and its existence is not totally refuted then the Administrator is bound to act immediately to eliminate the hazard, unless there is some countervailing factors which makes the highest degree of safety in air travel not "possible". (See Rosenhan v. United States, 131 F. 2d 932 (C.A. 10th, 1942) cert. denied. 318 U.S. 799). The countervailing factor could be established by evidence of a different and greater safety risk created by the proposed action or of a substantial difficulty in implementation of the proposed action or of the social utility or worth of the activity which creates the potential safety hazard or even, conceivably, of the

His words, on p. 17 of the brief, suggest to the contrary by acknowledging that "in some cases the showing of the mere potentiality of a safety hazard" can warrant action being taken to eliminate the hazard. If he concedes that, we are unable to see how on this record the Administrator can reasonably refuse to ban smoking on airplanes.

economic cost to airlines of the proposed action. No such justification has been presented by the Administrator for his refusal to ban smoking on airplanes.

Thus, in the absence of any countervailing considerations which would warrant continuing smoking on airplanes the question on review here is whether the evidence presented by Appellants establishes an unrefuted potential safety hazard. If it does, then the Administrator by failing to give any countervailing reason for not acting, has been arbitrary and capricious in his refusal to meet his statutory duty by providing for the highest possible degree of safety in air travel.

The principal argument of Appellants with respect to the sufficiency of the evidence presented to the Administrator to establish the potential safety hazards created by smoking on airplanes appears at pages 21-31 of Appellants main brief. However a few points made by the Administrator in his brief warrant comment.

^{5/} Attempts by counsel to manufacture at this late date possible countervailing factors not previously suggested or proven by the Administrator (Brief, pp. 18-19, 24-25) is obviously not relevant in this proceeding to review the Administrators action to determine if he has stated a rational basis in fact and law for his refusal to act. Burlington Truck Lines v. United States, 371 U. S. 156 (1962).

If such reasons existed it is likely that they would not totally excuse the refusal to ban smoking but would at best only excuse the refusal to ban with respect to certain planes, flights of certain duration and the like. A presentation by the Administrator of any such countervailing factors would have afforded Appellants an opportunity to examine these questions.

The counsel for the Administrator concedes that (Brief, p. 29):

It is indeed true, as plaintiffs stated, that these three incidents can be considered "at least evidence of how fire and fire induced smoke can be caused by smoking on airplanes".

As noted earlier the subsequent discussion of the degree of likelihood of the risk materializing is not really relevant until some countervailing factor which supports a continuation of smoking on airplanes has been presented. Counsel's suggestions (Brief, pp. 29-30) of other flying activities which create risks but which are still allowed are not relevant for in each case a sensible contervailing factor which supports the activity is rather apparent. Smoking on the other hand is condemned by the United States Surgeon General, discouraged by Congress and banned in this and many other court rooms and public places. Its social utility in any context where innocent parties may suffer direct physical harm from it, is neither apparent nor even plausible.

With respect to health hazards created for non-smoking passengers the Administrator continues to pursue the basic line of argument that if the non-smoker is no worse off in the plane than he is on the ground in other public places there is no basis

The Administrator contends that failure to demonstrate accidents caused by smoking (a failure more likely attributable to the fact that this data is difficult to uncover) is evidence that no danger exists. Surely, we should not await a tragedy before deciding to do something about a potential safety problem. The Administrator also contends (Brief, p. 36, fn. 12) that airplane interiors, although tested at maximum temperatures lower than burning tobacco are made of materials which are slow burning and easily extinguished. Those characteristics are only shown to exist for the fabrics when tested at temperatures below that of burning tobacco. See 14 CFR Section 25.853. No tests have been made at higher temperatures.

for improving his plight on the airplane. (Jt. App. 227, Brief, pp. 33-38) That reasoning totally ignores the Administrator's duty with respect to safety, which duty he concedes includes protecting the health of airplane passengers (Jt. App. 208). An airplane interior is in many respects, and is meant to be, safer and healthier than other places. It is regulated by the federal government which limits the availability of air travel and whose responsibility to the public welfare is far greater than that of a restaurent owner or a bar keeper who is not part of a government supervised monopoly.

With respect to impairment of visual and mental acuity of crew members we refer to the comments of the Administrator (Jt. App., 228):

While there is some evidence that pilots who smoke cigarettes with deep inhalation may experience some decrease in night vision sensitivity [rod vision] as a result of the lowering of the oxygen content of their blood, pilots in civil aviation do not depend upon high night vision sensitivity for safe operation. They work with brightly-lighted instrument panels, runways, and anticollision lights. All pilots, smokers and nonsmokers, rely on the objects they observe outside of the cockpit at night on the required bright lighting, since frequent reference having the required bright lighting, since frequent reference to lighted instruments inside the cockpit of necessity impairs the ability of any pilot to adjust his eyes to the darkness outside.

And his counsel (Brief, p. 37):

The Administrator dismisses without comment the plight of the four Appellants here who suffer from allergies and are seriously restricted in use of air travel (Jt. App 59-62). Millions of other Americans suffer similar effects which are detailed in other Americans suffer similar effects which are detailed in the letters in the Administrator's files. (Jt. App. 47-52, the letters in the Admini

Clearly, if one's night vision is already impaired by his working with bright lights, the effect of smoking on his night vision is of little consequence.

as clear indication that the Administrator has acted arbitrarily and capriciously.

In his brief the Administrator explores some principles of administrative law most of which are not in issue here. (Brief, . . pp. 20-24, 34-35). Appellants do not contend that they have not had an opportunity to present affirmative evidence and arguments to the Administrator or that their veiws were not considered. They do not contend that the rule making should have been more formal than it was nor that the Administrator was confined only to that data which was presented by the Appellants. Reliance on informal communications and agency expertise are not, in our view improper in this kind of proceeding. To the extent that there have been procedural irregularities they relate to one issue - to what extent must the

The dangers of carbon monoxide are well established. Because additional research is needed to set safe levels of carbon monoxide (Jt. App. 125) the National Research Council has concluded that "no 'threshold' below which one could be sure there was no effect was found, nor was such a threshold completely ruled out". The impact on pilots of inhaling carbon monoxide laden tobacco smoke are well known. (Jt. App. 155-156, 157, 192.)

Administrator in this kind of informal proceeding permit Appellants and this Court to know the basis in law and fact for his refusal to $\frac{9}{}$ act.

The standard is a practical one and not rigid as the Administrator suggests. The aggrieved party is to be given sufficient knowledge of the Administrator's basis for this refusal to act that he will have an opportunity to rebut those reasons and to make his views prevail. Automotive Parts & Accessories Association v. Boyd, 132 U.S. App. D.C., 200, 213, 407 F. 2d 330, 343 (1968) (cited for this point at pp. 21-22 of the Administrator's Brief). As indicated in Appellants' main brief (pp. 11-13) the Administrator had not provided a sufficient explanation of the basis in fact for his conclusions respecting safety in air travel to permit Appellants to respond. (Jt. App. 220-229) The District Court acknowledged this by remanding the case to the Administrator for (Jt. App. 217):

a full complete statement of the reasons both factual and legal, for his refusal to order an emergency ban on smoking on all passenger carrying civil aircraft (including rotor craft) and all materials considered by the Administrator in reaching his factual determination.

There is no merit to the Administrator's contention that because an expeditious rule making proceeding is involved here, the Administrator has a lesser duty to give the basis for his decision. See Environmental Defense Fund v. Hardin, supra, involving review of the Secretary's refusal to take emergency action against DDT. In any expedited proceeding there may be less reasons but not a lesser duty to reveal those reasons and the underlying facts supporting them.

The Administrator's basis for his actions or refusal to act not only must be sufficiently explicit to allow the parties to present rebuttal but must also allow the Court to have "prompt and effective review" (Environmental Defense Fund v. Hardin, supra, 428 F. 2d at p. 1100) and to "pass on the reasonableness" (Public Service Commission of the State of New York v. FPC, _____ U.S. App.

D. C. ____, ___ F. 2d ____ (decided June 29, 1970, slip op., p. 6)) of the Administrator's determination. As indicated in Appellants' main brief (pp. 21-31) if the reasons given by the Administrator for his refusal to act have all been stated then they are a far cry from evidence of a reasonable decision. If the hidden expertise and informal discussions include other facts which would make the decision more reasonable, the Administrator should be required to reveal those facts and the basis for his experts' opinions.

This practical standard of how much detail must be included in the Administrator's explanation of his actions after an informal rule making proceeding provides the flexibility in rule making which this Court stressed in its decision in American Airlines, Inc. v. C.A.B.,

If the Court concludes that this latter course of action is warranted we respectfully request that the Administrator, who has already been given a chance by the District Court to explain his refusal to act, be ordered to ban smoking on airplanes until such time as this Court has determined that a reasonable basis for that refusal has been presented by the Administrator.

(en banc), cert. denied, 385 U.S. 843. In some cases, such as California Citizens Bank Ass'n. v. United States, 375 F. 2d 43, 54 (C.A. 9th, 1967) cert. denied, 389 U.S. 844, the substance of agency expertise may not be needed for effective review while in other cases, such as Public Service Commission of the State of New York v. FPC, supra, such data may be essential to effective review.

The statement of the Administrator explaining his refusal to act in this case illustrates the need for a greater disclosure of the facts upon which he relied in reaching his conclusions. For instance, he states that his experts advise him that the ventilation system exchanges the airplanes air every three minutes. (Jt. App. 223-224, 225). But this allegation is meaningless unless we know whether fresh, smoke free air replaces the cabin air or whether this is merely recirculation of the air. In both the Boeing 707 accident and the United Air Lines accident the smoke filled the cabin and could not be adequately evacuated. Reference to a preliminary study of the effects of smoking in airplanes (Jt. App. 226) does not give any details sufficient to assess the conclusions. There is information on the duration of smoking, number of passengers smoking, the use of regularly maintained aircraft, or specially prepared test aircraft, the type of testing devices used on their location, etc. The mere assertion that FAA experts conclude that ashtray fires in the crew compartment are not safety hazards (Jt. App. 228), is hardly a reviewable statement.

These and many similar deficiencies in the Administrator's statement of reasons for his refusal to act have forced Appellants to seek relief in the Courts. It is not our contention that this data if submitted should be minutely examined by this Court or the lower court in the form of a substantial evidence review. Rather, if Appellants could be allowed a more meaningful disclosure of the Administrator's reasons for his action, it could obviate court review completely by giving each side the fullest opportunity to persuade the other. We have great confidence in the ability of fully disclosed facts and open discussion of issues as a means for resolving differences between government agencies and private citizens. main purpose of the Court is to assure that both parties are adequately informed of the others' views and, when all else fails, to conduct a limited review of the final decision. In this case the system has broken down because the Administrator is unwilling to share with Appellants and the court, although ordered to do so by the District Court, the complete basis in law and fact for his conclusion.

The Administrator's actions from the outset have been to delay and procrastinate. The Advanced Notice of Proposed Rule Making (receipt of comments on which ended on June 25, 1970) not only bostponed a final decision but to date has produced no action. We believe that foot dragging by a government agency which uses delaying procedures to avoid facing issues is the most serious kind of agency dereliction. It frustrates citizens and badly hampers court review.

In Environmental Defense Fund v. Hardin, supra, this Court allowed defendant one chance to take action against DDT or explain the reason for his refusal to act. The Administrator here has had one chance. His response is neither adequate justification for his action hor is it adequate statement of the basis for his action. Unless this Court orders the Administrator to impose an immediate ban on smoking on airplanes pending his presentation of a fuller explanation of his refusal to act, the Administrator will be encouraged in the future to resolve issues presented to him by the same delaying tactics.

Respectfully submitted,

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